

A/E Design Parking Structure Lot-7

VA Contract No.: VA69D-14-D-0131

P.O. No.: 695-Z50001

Task Order No.: 02 Project # 695-325

For the
Department of Veterans Affairs
Clement. J. Zablocki Veterans Medical Center
Milwaukee, WI. 53295

Project Manual

DIVISIONS 00 SPECIAL SECTIONS

BID SET



12/1/2015

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CARL WALKER, INC.

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ISSUE DATE: December 1, 2015

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CERTIFICATION PAGE

Architecture



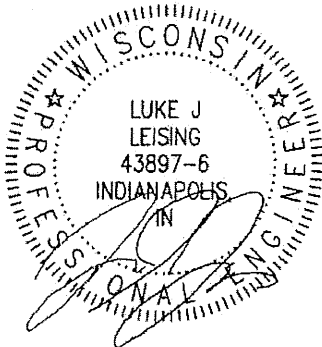
Guidon Design Inc.

Structural Engineering



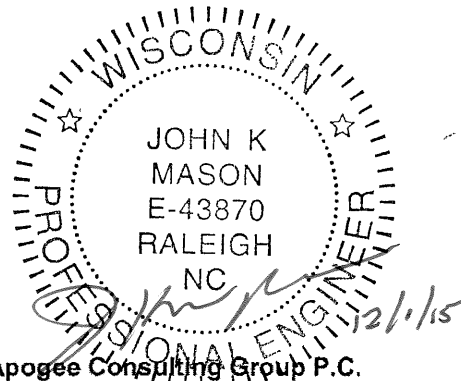
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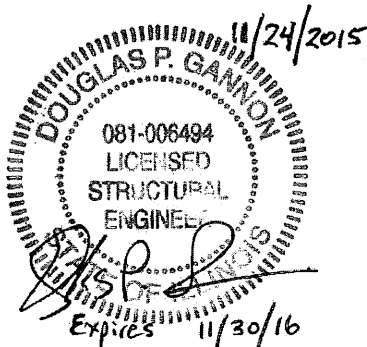
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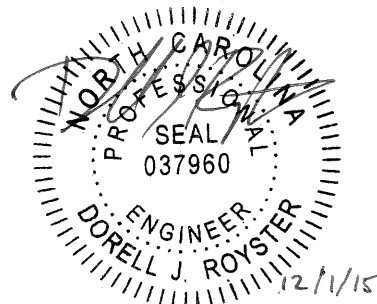
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Functional Design



Carl Walker Inc.

Mechanical/Plumbing Engineering



Apogee Consulting Group P.C.

**DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS**

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Geotechnical Engineering Report

**Lot 7 Parking Garage at VA Hospital
Milwaukee, Wisconsin**

June 2, 2015

Terracon Project No. MR155043

Prepared for:

Guidon Design
Indianapolis, Indiana

Prepared by:

Terracon Consultants, Inc.
Franklin, Wisconsin

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials



June 2, 2015

Guidon Design
905 N. Capitol Avenue, Suite 100
Indianapolis, Indiana 46204

Attn: Mr. Kyle J. Cyr, P.E., Env. SP
Senior Civil Engineer / Project Manager

Re: Geotechnical Engineering Report
Lot 7 Parking Garage at VA Hospital
5000 W. National Avenue
Milwaukee, Wisconsin
Terracon Project No. MR155043

Dear Mr. Leising,

Terracon Consultants, Inc. (Terracon) has completed the geotechnical engineering services for the above referenced project. This study was performed in accordance with our proposal No. PMR150008, dated March 16, 2015. This report presents the findings of the subsurface exploration and provides geotechnical recommendations regarding the design and construction of foundations, below grade walls and floor slabs for the project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants, Inc.

A handwritten signature in black ink, reading "Justin D. Warner".

Justin D. Warner, P.E.
Project Engineer
Wisconsin No. E42425-6

A handwritten signature in black ink, reading "Paul A. Tarvin".

Paul A. Tarvin, P.E.
Geotechnical Department Manager
Wisconsin No. E25612-6

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EXECUTIVE SUMMARY

Terracon Consultants, Inc. (Terracon) has completed a subsurface exploration for the proposed Lot 7 parking garage planned at the VA Hospital in Milwaukee, Wisconsin. Eight (8) borings were performed at the site to depths of about 75 feet below the existing ground surface. This summary should be reviewed in conjunction with the complete report.

- Existing fill materials comprised primarily of lean clay were encountered to depths of about 12 to 26 feet below existing grades at the boring locations. In addition, discrete deposits of buried, potentially compressible, topsoil were encountered within the lean clay fill. Shallow spread foundations are not considered viable for use because: 1) the depth of over excavation required to remove undocumented fills and buried topsoil would not be economical compared to other foundation alternatives, and 2) the anticipated column loads would likely result in excessively large and uneconomical footing sizes.
- The fill material was underlain by a layered soil profile consisting of native stiff to hard lean clay, loose to medium dense sandy silt and medium dense to dense sand soils. We recommend that the Lot 7 parking garage be supported on a deep foundation system consisting of augered cast-in-place (ACIP) piles extended through the undocumented fills to the native stiff to hard lean clay or medium dense to dense sands. ACIP piles should not be supported on the loose to medium dense sandy silt.
- Due to the depth of fill, it does not appear practical or economical to completely remove and replace the fill for slab on grade support. Provided the owner is willing to accept the risk associated with supporting the first level parking slab over the existing fill materials in exchange for reduced construction costs, it is our opinion that stable portions of the existing fill could be left in place for support of the new parking slab. Since the site is currently used for automobile parking, and the final use of the grade-supported first floor slab will also be used for car parking, construction evaluation of the surface of the fill and shallow improvement (where necessary) appears to be the most practical method for providing floor slab subgrade support.
- Close monitoring of the construction operations discussed herein will be critical in achieving the design subgrade support. We therefore recommend that Terracon be retained to provide observation/testing during this portion of the work.

This summary should be used in conjunction with the entire report for design purposes. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein. The section titled **GENERAL COMMENTS** should be read for an understanding of the report limitations.

GEOTECHNICAL ENGINEERING REPORT LOT 7 PARKING GARAGE AT VA HOSPITAL MILWAUKEE, WISCONSIN

Terracon Project No. MR155043

June 2, 2015

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) has completed a subsurface exploration for the proposed parking garage planned at the Veteran's Affairs (VA) Hospital in Milwaukee, Wisconsin. Eight (8) borings were performed at the site to depths of about 75 feet below the existing ground surface. Boring logs, a Site Location Diagram and a Soil Boring Location Diagram are included in Appendix A. This report describes the subsurface conditions encountered at the boring locations, presents the test data, and provides geotechnical engineering recommendations regarding the following items:

- site preparation and earthwork
- design and construction of auger cast foundations
- floor slab subgrade preparation
- lateral earth pressure parameters for below grade walls
- seismic site class

2.0 PROJECT INFORMATION

2.1 Project Description

Item	Description
Site layout	See Appendix A, Exhibit A-3 Soil Boring Location Diagram
Structure	<p>A new parking garage with plan dimensions of approximately 550 feet by 250 feet is planned to be constructed within the existing Lot 7 surface lot. The parking structure will have 350 to 450 parking spaces while displacing the fewest number of spaces practical in Lot 7. Based on previous work at Lot 4, we anticipate that the Lot 7 parking garage will initially have four levels, but may be designed to accommodate a future vertical expansion of two additional levels (i.e., a total of six levels after the final build-out).</p> <p>The parking garage will be a pre-cast concrete structure.</p>

Geotechnical Engineering Report

Lot 7 Parking Garage at VA Hospital ■ Milwaukee, Wisconsin

June 2, 2015 ■ Terracon Project No. MR155043



Item	Description
Finished floor elevations	Finished floor elevations are not known at this time; however, we anticipate the first floor level will roughly match or be slightly below existing site grades which vary from about 625 to 640 feet across Lot 7.
Maximum loads	Based on previous work for the Lot 4 garage, we have assumed the following loads for a 6-level garage: Exterior Columns: 340 to 540 kips Interior Columns: 650 to 765 kips Wall Loads: 35 kips per linear foot
Grading	Ground surface elevations vary from about 625 to 640 feet across Lot 7. Based on previous work at Lot 4, we anticipate that cuts of 5 to 10 feet may be required to achieve the required subgrade elevations for the Lot 7 garage depending on the finished first floor elevation.

2.2 Site Location and Description

Item	Description
Location	5000 W. National Avenue, Milwaukee, Wisconsin
Current site improvements	The new parking garage will be constructed in an area east of the existing VA hospital that is currently an asphalt-paved parking lot (Lot 7).
Existing topography	Based on the topographic site plan provided, elevations at the site range from approximately 625 feet in the southwest corner of the site to about 640 feet in the northeast corner.

3.0 SUBSURFACE CONDITIONS

3.1 Typical Profile

Subsurface conditions at each boring location are described on the individual boring logs in Appendix A. The stratification boundaries shown on the boring logs represent the approximate depths where changes in material types occur. In-situ, transitions between material types can be more gradual. Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Geotechnical Engineering Report

Lot 7 Parking Garage at VA Hospital ■ Milwaukee, Wisconsin

June 2, 2015 ■ Terracon Project No. MR155043



Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Surface	12 inches	4½ to 7 inches of asphalt underlain by 2 to 3 inches of crushed stone aggregate. Surface section was underlain by 2 to 3 inches of poor asphalt at discrete locations.	N/A
1	12 to 26 feet	Fill: typically brown lean clay (CL) with varying, but generally minor, amounts of sand and gravel. Discrete layers of granular material (ML, SM, SC) and buried topsoil were encountered within the lean clay fill.	N-Values: 6 to 41 Moisture Content: 10 to 39%
2	28½ to 54½ feet ¹	Interbedded native cohesive and semi-cohesive soils: typically brown to gray lean clay (CL), silty clay (CL-ML) and silt (ML) with varying amounts of sand and gravel	Clay: typically stiff to hard with moisture contents ranging from about 10 to 25% Silt: typically medium dense
3	45 to 67 feet ²	Native granular soils: silty sand (SM) and poorly graded sand (SP, SP-SM) with varying, but generally minor, amounts of clay and gravel	Typically medium dense to dense
4	57½ feet to the boring termination depths of 75 feet	Native gray lean clay (CL) with minor amounts of sand and gravel	Typically very stiff to hard
5	Stratum encountered to the boring termination depths of 75 feet ³	Native gray sandy silt (ML) with minor amounts of sand and silt	Typically medium dense

1. The thickness of stratum 2 tended to increase from north to south across the site.
2. The thickness of stratum 3 tended to decrease from north to south across the site. The thickest deposits of granular material were encountered in Borings B-2 and B-5 near the northeast corner of the site. Stratum 3 was not encountered in Borings B-4 and B-8 at the south end of the site.
3. Stratum 5 was generally encountered in the southern half of the site beneath Stratum 4. Stratum 5 was not encountered in Borings B-1, B-2 and B-6.

3.2 Water Level Observations

The borings were observed during drilling for the presence and level of water. The subsurface water levels observed are indicated on the boring logs in Appendix A and are summarized in the following table.

Boring No.	Groundwater Depth (Elevation) Observed While Drilling, ft ¹
B-1	18 (612)
B-2	20 (611½)
B-3	22½ (615)
B-4	17½ (624)
B-5	12½ (615)
B-6	16½ (616)
B-7	20 (615½)
B-8	26 (612½)

1. Depth below grade, elevations have been rounded to the nearest ½ foot

Due to the low permeability of the clay soils encountered in the borings, a longer period of time may be required for groundwater to develop and stabilize in a borehole. Longer term observations in piezometers or observation wells sealed from the influence of surface water are often required to define long term groundwater levels in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. In addition, perched or trapped water can develop over low permeability soils or within existing fill materials. Therefore, groundwater levels during construction or at other times in the life of the structure may be different than the conditions encountered at the time the borings were drilled. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

4.0 RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

4.1 Geotechnical Considerations

Undocumented and variable lean clay fill deposits were encountered to depths of 12 to 26 feet below existing grades at the boring locations. In addition, discrete deposits of buried, potentially compressible, topsoil were encountered within the lean clay fill. Therefore, shallow spread foundations are not considered viable for use because: 1) the depth of over excavation required

to remove undocumented fills and buried topsoil would not be economical compared to other foundation alternatives, and 2) the anticipated column loads would likely result in excessively large and uneconomical footing sizes. For these reasons, we recommend that the Lot 7 parking garage be supported on a deep foundation system consisting of augered cast-in-place (ACIP) piles extended through the undocumented fills to suitable native soils below. Other deep foundation options such as drilled shafts or driven piles were also considered. However, the presence of saturated granular deposits would likely require that drilled shaft be installed using slurry excavation methods with temporary casing and concrete placement by tremie which would drive up cost. Similarly, the noise and vibration associated with driven pile installations may be problematic to the existing hospital. Thus, ACIP piles are considered the most feasible deep foundation support option. In addition, the adjacent Lot 4 garage has been designed with ACIP piles.

4.2 ACIP Pile Foundation Design Recommendations

We recommend that the ACIP piles be extended through the fill and supported on the native very stiff to hard lean clay (CL), medium dense silt (ML), or medium dense to dense granular deposits (SP, SP-SM, SM). The ACIP piles should be extended a minimum of one shaft diameter or at least 3 feet into the recommended bearing stratum, provided suitable lateral resistance is achieved.

ACIP piles derive their load bearing capacity through a combination of frictional resistance along the shaft (skin friction) and in end bearing. As a result, ACIP piles extended to greater depths generally provide higher allowable total capacities. Design parameters for ACIP piles are provided in the following table. The table represents an average condition across the site based on the eight (8) borings. Skin friction resistance in the upper fill soils should be ignored in the upper 5 feet when evaluating axial and uplift capacity due to a potential loss in strength from frost effects.

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Soil Type	Approx. Bottom of Layer Elevation (ft)	Effective Unit Weight ^{4,5} (pcf)	Total Friction Angle (deg)	Cohesion (psf)	Net Allowable End Bearing Pressure ^{2,6} (psf)	Allowable Compression Unit Side Friction ^{2,3} (psf)	Allowable Uplift Unit Side Friction (psf)	Passive Earth Pressure Coefficient
Lean Clay Fill ¹	615+/-	120	--	1,500	--	400	270	1.00
Interbedded Silt & Clay	590+/-	60	29	--	4,500	400	270	2.88
Medium Dense Sand	575+/-	60	34	--	7,500	950	650	3.54
Stiff to Hard Lean Clay	565+/-	65	--	2,500	7,500	550	350	1.00
Medium Dense Silt	Below 560+/-	60	30	--	6,000	800	550	3.33

1. Neglect soil resistance in upper 5 feet due to frost action and other disturbance.
2. End bearing values includes a safety factor of 3; compression side friction values include a safety factor of 2; uplift side friction values have been reduced by a factor of 1/3 from the allowable compression side resistance values.
3. Straight-sided auger cast piles in direct contact with adjacent soil (uncased).
4. Approximate moist unit weight of soil above groundwater level; approximate buoyant/effective unit weight of soil below groundwater level.
5. Parameters assume groundwater table is located at approximate elevation 615 feet.
6. The shaft must bear at least one (1) diameter or at least three (3) feet into the bearing stratum, whichever is greater, in order to use this end bearing pressure.

The *Beta*-method of analysis, as detailed in Section 10.8.3.5 of the 2014 American Association of State and Highway Transportation Officials (AASHTO) Load and Resistance Factor Design Manual (after O'Neill and Reese (1999)), was used to calculate the static end bearing and skin friction resistances. The estimated allowable resistances presented above are for single piles and piles in a group with center-to-center spacing of between 3 and 5 shaft diameters. A factor of safety (FOS) of 3 was used to estimate the allowable end bearing resistance and an FOS of 2 was used to estimate the allowable unit side friction under compressive loads.

Resistance to uplift will be provided by the dead weight of the pile, garage structure, and the skin friction resistance below 5 feet. Allowable skin friction resistances for uplift resistance are provided in the table above. These values have been reduced by 1/3 from the allowable skin friction resistance for compressive loads. Frost action beneath pile caps and grade beams can cause uplift loads on the piles. To avoid uplift loads due to frost, the base of pile caps and/or grade beams should extend a minimum of 5 feet below the lowest adjacent grade.

Resistance to overturning will be provided by the dead weight of the structure and foundation, as well as the passive earth pressure acting on the face of the ACIP pile. Passive earth pressure resistance should be calculated using a triangular stress distribution and the passive earth pressure coefficients presented in the above design parameters table. We recommend using a minimum FOS of 2 in calculations to determine the allowable passive resistance because of the large strains involved to mobilize the full passive resistance. The passive earth pressure resistance should be neglected in the upper five feet of the soil profile due to a reduction in strength from frost effects.

Using the design parameters provided above, we have calculated allowable uplift and vertical/compression capacities for three different pile diameters and depths. The allowable capacities are provided in the following table. Allowable capacities for other pile diameters and depths can be calculated using the design parameters provided above.

Pile Top Elevation (ft)	Pile Bottom Elevation (ft)	Pile Length (ft)	Allowable Uplift Capacity (kips)			Allowable Compression/Vertical Capacity (kips)		
			Pile diameter (in)			Pile diameter (in)		
			14" ϕ	16" ϕ	18" ϕ	14" ϕ	16" ϕ	18" ϕ
635	580	55	60	70	80	100	115	130
635	575	60	75	85	95	115	135	155
635	570	65	85	100	110	135	155	175

The ACIP piles should be properly reinforced to resist lateral loads. We recommend that the piles be designed for a maximum lateral deflection of 1 inch and an angle of curvature of no more than 0.25 degrees measured at the ground surface.

Terracon completed a preliminary lateral analyses of ACIP piles to be used in support of the Lot 7 parking garage. The purpose of the lateral analyses was to evaluate the maximum shear load that could be supported by the individual piles while limiting maximum deflection and curvature to 1 inch and 0.25 degrees, respectively.

The lateral analyses were completed using the computer program LPILE (ver. 2013.7.05 © 2014 by Ensoft, Inc.) to analyze the stress and deformation of the individual ACIP piles. The subsurface profile used in the lateral analyses were based on the results of the borings completed as part of this exploration. LPILE requires the input of soil elastic properties (i.e., horizontal modulus of subgrade reaction, k), strain at 50 percent of the principal stress difference (E_{50}), undrained shear strength (c), angle of internal friction (ϕ'), and load-deflection (p - y) criteria to evaluate lateral stability. The p - y criteria, which are commonly used to model soil reaction, have been developed by LPILE based on data from instrumented load tests and

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are generally considered to provide an accurate model of soil behavior under short term lateral loading. It should be noted that the p - y criteria is not only a function of the soil properties but also the diameter of the structure foundation. The lateral soil properties used in the lateral analyses are summarized in the table below.

Soil Type	Approx. Bottom of Layer Elevation (ft)	LPILE Material Type ¹	Effective Unit Weight ² (pcf)	Total Friction Angle (deg.)	Cohesion ³ (psf)	Modulus of Horizontal Reaction, k ³ (pci)	Soil Strain at 50% Stress, ϵ_{50}
Lean Clay Fill ¹	615+/-	3	120	--	1,500	500	0.007
Interbedded Silt & Clay	590+/-	4	60	29	--	60	--
Medium Dense Sand	575+/-	3	60	34	--	60	--
Stiff to Hard Lean Clay	565+/-	3	65	--	2,500	1000	0.005
Medium Dense Silt	Below 560+/-	4	60	30	--	60	--

1. LPILE Material Type: 3 = Stiff Clay without Free Water, 4 = Sand
2. The groundwater table is estimated to be at approximate elevation 615 feet.
3. Lateral resistance in the upper 5 feet should be conservatively reduced due to frost action and other disturbance

Group action for lateral resistance of ACIP piles should be taken into account when center to center spacing is less than 5 diameters. Design capacities in the direction of the load should be reduced in accordance with the following table.

Pile Center to Center Spacing (Pile Diameters) in the direction of loading ¹	Passive Resistance Reduction Factors		
	Row 1	Row 2	Row 3 and higher
5D	1.0	0.85	0.7
4D	0.9	0.6	0.5
3D	0.8	0.4	0.3

1. After AASHTO LRFD Bridge Design Specifications, 2014 – Table 10.7.2.4-1

A passive resistance reduction factor of 0.7 was used for the lateral analyses included in this report based on the assumption that the design pile spacing will be roughly 5D and that the individual pile caps will contain at least 3 rows of piles.

The following load combinations and pile configurations were evaluated for this report.

- 14-in. dia. ACIP, 60 ft. long, minimum, 3,500 psi grout
 - Case 1 – 35 kip uplift load (i.e., roughly $\frac{1}{2}$ of allowable uplift capacity)
 - Case 2 – 115 kips compression load (i.e., full allowable compression capacity)
- 16-in. dia. ACIP, 60 ft. long, 3,500 psi grout
 - Case 1 – 40 kip uplift load (i.e., roughly $\frac{1}{2}$ of allowable uplift capacity)
 - Case 2 – 135 kip compression load (i.e., full allowable compression capacity)
- 18-in. dia. ACIP, 60 ft. long, 3,500 psi grout
 - Case 1 – 45 kip uplift load (i.e., roughly $\frac{1}{2}$ of allowable uplift capacity)
 - Case 2 – 155 kip compression load (i.e., full allowable compression capacity)

Based on the ACIP design for Lot 4, we anticipate that the longitudinal reinforcement will likely consist of eight (8) reinforcing bars arranged in a circular pattern and extending from the top of the ACIP to a depth of approximately $\frac{1}{4}$ the total pile length. A minimum 3-inch clear spacing will be maintained between the edge of the ACIP and the circular reinforcing cage. In addition, a larger diameter longitudinal reinforcing bar will be installed down the center of the ACIP for the entire length. The size of the reinforcing bars for the circular cage and central bar will depend on the actual ACIP design diameters and loads; however, for the purposes of this preliminary analysis, we have used the following anticipated reinforcement configurations.

- 14-in. dia. ACIP
 - Circular Reinforcing Cage: Eight (8) No. 4 bars approximately 15 feet long
 - Central Bar: One (1) No. 9 bar approximately 60 feet long
- 16-in. dia. ACIP
 - Circular Reinforcing Cage: Eight (8) No. 5 bars approximately 15 feet long
 - Central Bar: One (1) No. 10 bar approximately 60 feet long
- 18-in. dia. ACIP
 - Circular Reinforcing Cage: Eight (8) No. 6 bars approximately 15 feet long
 - Central Bar: One (1) No. 11 bar approximately 60 feet long

The results of the lateral analyses are summarized below and the individual deflection, moment and shear diagrams are included in Appendix C, Exhibits C-1 to C-9. Terracon should be allowed to review the results of the lateral analyses and revise as necessary, once the design ACIP pile diameters, depths, reinforcing configuration and lateral loads are known.

Pile Dia. ¹	Pile Bottom Elevation (ft)	Pile Length (ft)	Vertical Load Description	Preliminary Lateral Analysis Results		
				Maximum Shear Load (kips)	Max Bending Moment (kip-ft)	Max Deflection (in)
14-inch	575	60	35 kip uplift	12	45	≤1.0
			115 kip compression	17	77	≤1.0
16-inch	575	60	40 kip uplift	16	71	≤1.0
			135 kip compression	22	110	≤1.0
18-inch	575	60	45 kip uplift	20	97	≤1.0
			155 kip compression	28	151	≤1.0

1. Grout yield strength = 3,500 psi with reinforcement configuration as described in Section 4.2.

Load bearing properties of at least one of the auger cast piles should be evaluated by performing a load test, in general accordance with the "Standard Method of Testing Piles under Axial Compressive Load," (ASTM D1143) prior to constructing the remaining pile foundations. Procedures required for constructing the test pile should be observed in order to establish desirable procedures for constructing the remaining production piles. The test pile grout should be at least 7 days old at the start of the test and should be at least 85% of the design strength. Accurate records of the auger cast pile installations should be maintained during construction.

Maximum post-construction settlements of deep foundations designed and constructed as described in this report are estimated to be about 1 inch for the allowable compression capacities provided above.

4.1.2 ACIP Pile Foundation Construction Considerations

ACIP piles should generally be spaced at least 3 diameters (center-to-center), and adjacent piles should have a staggered construction schedule that allows the grout to complete its initial set before an adjacent pile is drilled.

ACIP piles should be adequately reinforced to accommodate uplift and lateral loading conditions. It should be noted that the installation of a long reinforcing cage can be performed but may be problematic in ACIP piles. Tensile reinforcement may be provided by installing a single reinforcing bar in the center of the pile, possibly through the auger stem prior to grouting. Reinforcement installed within ACIP piles should include centering devices to assure the steel has adequate concrete cover within the piles.

The successful completion of ACIP piles depends to a large extent on the equipment and installation procedures. ACIP piles (typically 14 to 18 inches in diameter) are constructed by extending continuous hollow-stemmed augers to a predetermined depth and then pumping a fluid cement grout under pressure through the center of the hollow shaft as the augers are withdrawn, leaving a continuous concrete pile. Care should be taken during the ACIP pile installation

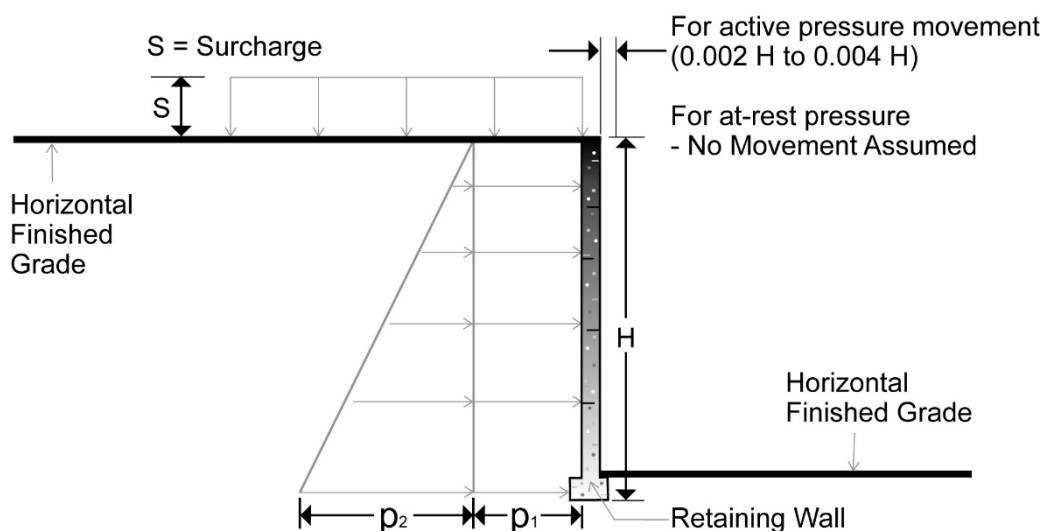
because of the potential for “necking” and “overdrilling” during the installation procedure. Controlled withdrawal of the auger will be necessary and a sufficient head of grout should be maintained in the auger system at all times to prevent necking down of the fluid mortar due to hydrostatic pressures. Cobbles and boulders are common in the glacial till soils encountered on this site, and this could create difficult drilling conditions. If auger refusal occurs prior to reaching design depth, a replacement pile may need to be installed, as directed by the project structural engineer.

Installing adjacent ACIP piles with clear distance spacing of less than 10 to 15 feet should be delayed until grout in the initial pile has set. This is recommended to avoid possible grout intrusion between the piles which could jeopardize the integrity of both piles.

4.2 Below Grade Walls

4.2.1 Lateral Earth Pressures

Walls with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is used for design of below grade walls that are fixed and cannot rotate, such as basement walls. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



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Lateral Earth Pressure Parameters				
Pressure Conditions	Coefficient For Backfill Type	Equivalent Fluid Unit Weight (pcf)	Surcharge Pressure, P_1 (psf)	Earth Pressure, P_2 (psf)
Active (K_a)	Granular - 0.33	40	(0.33)S	(40)H
At-Rest (K_o)	Granular - 0.50	60	(0.50)S	(60)H
Passive (K_p)	Granular – 1.5	180	---	---
	Lean Clay – 1.2	145	---	---

Applicable conditions to the above include:

- Uniform surcharge, where S is surcharge pressure. Surcharge loads within a zone defined by a plane extending from a 45 degree angle above the base of the wall should be included in the design.
- In-situ soil backfill weight a maximum of 120 pounds per cubic foot (pcf).
- Horizontal backfill should be compacted to a minimum of 95% of the maximum dry density as determined by the modified Proctor test, ASTM D1557.
- Loading from heavy compaction equipment not included.
- No hydrostatic pressures acting on wall.
- No dynamic loading.
- A factor of safety of 2.0 has been applied to the passive pressure coefficients to account for the large strains required to mobilize the full passive pressure.

Backfill placed within 2 feet behind the below grade walls should consist of a clean, free-draining granular soil containing less than 5% by weight passing the No. 200 sieve. To calculate the resistance to sliding, a value of 0.32 should be used as the ultimate coefficient of friction between the footing and the underlying soil. The granular backfill should be separated from the cohesive fills or native cohesive soils (where encountered) with a moderate to high survivability geotextile with an apparent opening size (AOS) of 70 to 100 to prevent the migration of fines into the granular backfill.

To control hydrostatic pressure behind below grade walls we recommend that a drain be installed at the foundation slightly above the footing, with a collection pipe leading to a reliable discharge. The drain pipe should consist of 4 or 6-inch diameter slotted PVC or corrugated HDPE pipe embedded in the free-draining granular backfill behind the wall. Alternately, weep holes could be installed at the base of the wall to allow drainage. In this case, the weep holes should be adequately filtered to prevent a loss of fines from behind the wall.

Heavy equipment should not operate and material stockpiles should not be located within a lateral distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided. The size of the compactor used behind the wall should be limited to less than 500 pounds to minimize stresses on the wall.

4.3 Floor Slabs

Subgrades in the slab-on-grade areas of the parking garage will consist of existing fill materials comprised primarily of lean clay with variable amounts of sand, silt and gravel.

We understand that the site is currently used for automobile parking and that the asphalt pavements have performed in a satisfactory manner. Since the grade-supported first floor slabs for the parking garage are expected to have similar loads as the current site use for car parking, it is our opinion that evaluation of the surface of the fill and shallow improvement (where necessary) is the most practical method for providing floor slab subgrade support. It should be noted that existing fill may contain unsuitable materials such as organics, debris and/or rubble; these conditions may not be disclosed by the widely spaced, small-diameter borings. If these conditions are present and are not discovered and corrected during construction, larger than normal settlement resulting in cracking or other damage could occur in slabs, utilities and other elements supported on or above the existing fill. These risks can be reduced by thorough observation and testing during construction, but they cannot be eliminated without complete removal and replacement of the fill.

4.3.1 Floor Slab Design Recommendations

Item	Description
Floor slab support	Existing on-site fill materials or new engineered fill materials that have been evaluated and prepared as recommended in this report
Granular leveling course ²	4 inches of well-graded crushed stone
Modulus of subgrade reaction	100 pci for a soil subgrade prepared as recommended in this report Note: a value of 125 pci can be used at the top of the compacted granular leveling course

1. Floor slabs should be structurally independent of building footings and walls supported on the footings to reduce the potential for floor slab cracking caused by differential movements between the slab and foundation.
2. The floor slab should be placed on a leveling course comprised of well-graded crushed stone (e.g., WisDOT Section 305.2.2.1, 1¼ inch aggregate) compacted to at least 95% of the material's modified Proctor maximum dry density (ASTM D 1557).

Joints should be constructed at regular intervals as recommended by the American Concrete Institute (ACI) to help control the location of cracking. It should be understood that differential settlement between the floor slabs and foundations could occur.

If moisture vapor transmission through the concrete slab is a concern, a vapor barrier should be used. The need for, and placement of, the vapor barrier should be determined by the architect or slab designer based on the proposed floor covering treatment, building function, concrete properties, placement techniques, and construction schedule. For further guidance concerning

the use of a vapor barrier system, refer to Sections 302 and 360 of the American Concrete Institute (ACI) Manual of Concrete Practice.

4.3.2 Floor Slab Construction Considerations

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed by utility excavations, construction traffic, desiccation, rainfall, etc. As a result, corrective action may be required prior to placement of the granular leveling course and concrete.

Terracon should review the condition of the floor slab subgrades immediately prior to placement of the granular leveling course and construction of the slabs. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by scarification/compaction or by removing the affected material and replacing it with engineered fill.

4.4 Earthwork

Earthwork on the project should be observed and evaluated by Terracon. Recommendations for site preparation, excavation, subgrade preparation and placement of engineered fill for the project are provided below.

4.4.1 Site Preparation

Existing pavements and any loose, soft, or otherwise unsuitable materials should be removed from proposed construction areas.

Following removal of surface materials and prior to placing new engineered fill and/or the granular leveling course for new floor slabs, the exposed soils should be observed and tested by Terracon. A Terracon representative should observe proofrolling of the exposed soils. Proofrolling can be accomplished using a loaded tandem-axle dump truck with a gross weight of at least 25 tons, or similarly loaded equipment. Areas that display excessive deflection (pumping) or rutting during proofroll operations should be improved by scarification and compaction or by removal and replacement with an approved gradation of engineered fill as outlined in Section 4.4.2.

4.4.2 Engineered Fill Material Requirements

Engineered fill should meet the following material property requirements:

Fill Type¹	USCS Classification	Acceptable Location for Placement
Cohesive ²	CL, CL-ML	Below slabs, in general fill/backfill areas
Granular	GW, GP, GM, GC, SW, SP, SM, SC	Below slabs, in general fill/backfill areas

Fill Type ¹	USCS Classification	Acceptable Location for Placement
Unsuitable	CH, MH, OL, OH, PT	Non-structural locations

- Engineered fill should consist of approved materials that are free of organic matter and debris. Cohesive fill materials should have a liquid limit less than 45 and a plasticity index less than 20; cohesive soils that do not meet these criteria should be considered “unsuitable.” Frozen material should not be used, and fill should be placed on a frozen subgrade. A sample of each material type should be submitted to Terracon for evaluation prior to use on this site.
- Based on visual and tactile examination of recovered soil samples and the results of the laboratory tests, most of the on-site clay soils would likely meet the criteria for engineered fill. However, any soils with an organic content greater than 5 percent, rock fragments larger than 3 inches, and other unsuitable materials should be removed prior to use of the existing fill materials in new fill sections.

4.4.3 Fill Placement and Compaction Requirements

Item	Description
Fill Lift Thickness	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used. 4 to 6 inches in loose thickness when hand-guided equipment (i.e., a jumping jack or plate compactor) is used.
Minimum Compaction Requirement^{1,2} Below Foundations and Slabs-on-grade	95% of the material's modified Proctor maximum dry density (ASTM D 1557). This level of compaction should extend beyond the edges of footings at least 8 inches for every foot of fill placed below the foundation base elevation.
Moisture Content of Cohesive Soil	-2% to +3% of modified Proctor optimum (ASTM D 1557)
Moisture Content of Granular Material³	Workable moisture levels

- We recommend that each lift of fill be tested for moisture content and compaction prior to the placement of additional fill or concrete. If the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
- If granular material is a coarse sand or gravel, is of a uniform size, or has a low fines content, compaction comparison to relative density (ASTM D 4253/4254) may be more appropriate. In this case, granular materials should be compacted to at least 60% relative density.
- The gradation of a granular material affects its stability and the moisture content required for proper compaction. Moisture levels should be maintained to achieve compaction without bulking during placement or pumping when proofrolled.

4.4.4 Earthwork Construction Considerations

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, proofrolling,

placement and compaction of compacted engineered fills, backfilling of excavations, and just prior to construction of building floor slabs and pavements.

Based on conditions encountered at the boring locations, seepage is not expected in shallow excavations within the fill. However, if seepage is encountered, the contractor is responsible for employing appropriate dewatering methods to control seepage and facilitate construction. In our experience, dewatering of excavations in clays can sometimes be accomplished with sump pits and pumps. Dewatering of excavations extending into sand soils below the water table, though not expected, could require multiple sump pits/pumps, well points, or other measures. In this instance, groundwater levels should be maintained at least 2 feet below the deepest excavation level to help improve stability in the base of the excavations.

Care should be taken to avoid disturbance of prepared subgrades. Unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. New fill compacted above optimum moisture content or that accumulates water during construction can also become disturbed under construction equipment. Construction traffic over the completed subgrade should be avoided to the extent practical. If the subgrade becomes saturated, desiccated, or disturbed, the affected materials should either be scarified and compacted or be removed and replaced. Subgrades should be observed and tested by Terracon prior to construction of slabs and pavements.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. Based on the soil boring results, we anticipate that the majority of shallow excavations will encounter lean clay fill soils in the upper 5 feet. This material is classified as Type C in accordance with OSHA regulations. Therefore, we recommend that shallow excavations be planned no steeper than 1.5 horizontal to 1.0 vertical (1H:1.5V) inclination for Type C soils. Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties. Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor's activities. Construction site safety is the sole responsibility of the contractor who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

4.4.5 Grading and Drainage

During construction, grades should be developed to direct surface water flow away from or around the site. Exposed subgrades should be sloped to provide positive drainage so that

saturation of subgrades is avoided. Surface water should not be permitted to accumulate on the site.

Final grades should slope away from the building to promote rapid surface drainage. Accumulation of water adjacent to the building could contribute to significant moisture increases in the subgrade soils and subsequent softening/settlement. Roof drains should discharge into a storm sewer or several feet away from building.

4.5 Seismic Site Class

On May 6, 2015 Terracon used a seismic refraction system (SRS) consisting of a seismograph and 24 geophones to perform a site-specific seismic class survey. A linear array of 24 geophones was placed in an accessible area as illustrated on the Exhibit A-2. A computer was used to record refraction microtremors produced by ambient seismic noise. The data was then processed using a wavefield-transformation data-processing technique and an interactive Rayleigh-wave dispersion-modeling tool. The refraction microtremor method exploits aspects of spectral analysis of surface waves (SASW) and multi-channel analysis of surface waves (MASW) to derive a shear wave profile and an average shear-wave velocity along the array for a corresponding depth of about 100 feet.

The International Building Code (IBC) requires structural design to be in accordance with the appropriate site class definition for soil profile type. Based upon the Site Class Definitions in IBC 2012, Section 1613.3.2, which refers to ASCE 7, Chapter 20, Table 9.4.1.2, and the average shear wave velocity of 1070 ft/s derived from our seismic survey data, Terracon recommends a Class D seismic site classification for design.

The average shear-wave velocity analysis and recommendations presented in this report are based upon the data obtained from the seismic refraction system performed at the indicated location and on the indicated date. This analysis does not reflect variations that may occur across the site, or variations that may occur throughout the year, such as groundwater fluctuations.

Based on our experience in the geological and seismic conditions within southern Wisconsin and the soil conditions encountered in the borings, we do not anticipate that liquefaction will be a concern at the project site.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon also should be retained to provide observation and

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testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

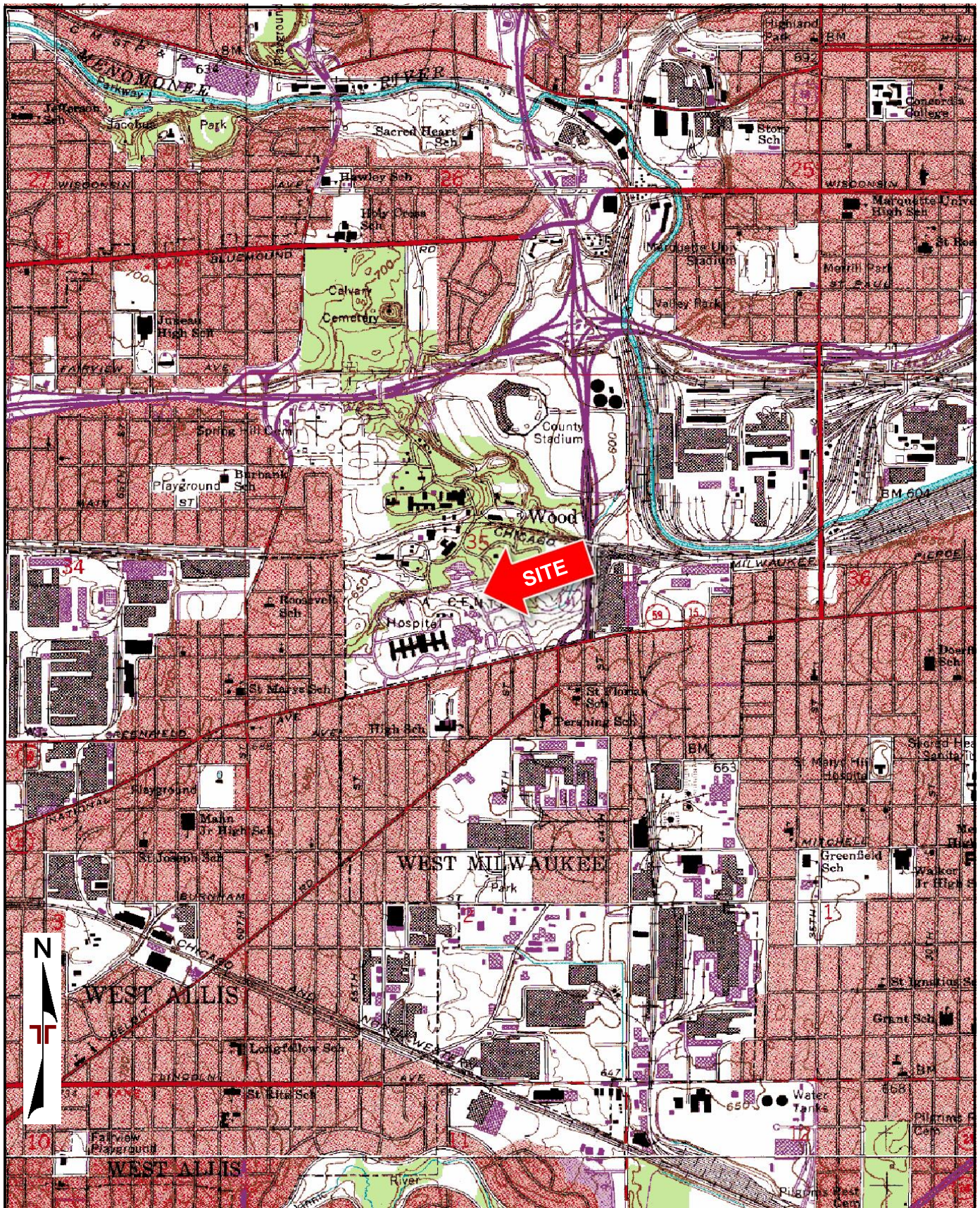
Support of the floor slab on/above existing fill is discussed in this report. Even with the construction observation/testing recommended in this report, a risk remains for the owner that unsuitable materials within or buried by the fill will not be discovered. This may result in larger than normal settlement and damage to the slab, requiring additional maintenance. This risk cannot be eliminated without removing the existing fill from below the building floor slab or the use of a structural slab, but can be reduced by thorough observation and testing as discussed herein.

The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of geotechnical services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety, excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.




APPENDIX A
FIELD EXPLORATION



Project Manager: JDW	Project No. MR155043	<div> <p>9856 South 57th Street Franklin, WI 53132</p> </div>	<div> <p>SITE LOCATION</p> <p>Milwaukee VA Hospital Lot 7 Parking Garage 5000 W. National Avenue Milwaukee, WI</p> </div>	<div> <p>Exhibit</p> <p>A-1</p> </div>
Drawn by: JDW	Scale: 1"=24,000 SF			
Checked by: PAT	File Name:			
Approved by: PAT	Date: 06/2015			




NOTE: BASE MAP CONCEPTUAL GARAGE LAYOUT PROVIDED BY GUIDON DESIGN LLC

-  TERRACON SOIL BORING LOCATION (APRIL & MAY 2015)
-  TERRACON SUBSURFACE PROFILE CROSS SECTION LOCATION
-  TERRACON REFRACTION MICROTREMOR SURVEY LINE LOCATION

REV	DATE	BY	DESCRIPTION

SOIL BORING LOCATION DIAGRAM

MILWAUKEE VA HOSPITAL
LOT 7 PARKING GARAGE
5000 W. NATIONAL AVENUE
MILWAUKEE, WISCONSIN


Consulting Engineers & Scientists

9856 South 57th Street
Franklin, WI
PH. (414) 423-0255
FAX. (414) 423-0566

EXHIBIT

A-2

FIG/DRAWING	
DESIGNED BY:	
DRAWN BY:	
APPVD BY:	
SCALE:	AS SHOWN
DATE:	06/2015
JOB NO.:	
ACAD NO.:	
SHEET NO.:	

Field Exploration Description

The borings were drilled at the approximate locations indicated on the attached Boring Location Plan (Exhibit A-2). Terracon representatives laid out the borings in the field by estimating distances and right angles from available reference features. The boring locations were surveyed by The Sigma Group, and the surface elevations provided are shown on the attached boring logs.

The borings were drilled with a truck-mounted, rotary drill rig using continuous flight augers and mud rotary (wash boring) procedure to advance the boreholes. Soil samples were obtained using split-barrel sampling procedures, in which a standard 2-inch (outside diameter) split-barrel sampling spoon is driven into the ground with a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. These values, also referred to as SPT N-values, are an indication of soil strength/density and are provided on the boring logs at the depths of occurrence. The samples were sealed and transported to the laboratory for testing and classification. Upon completion of drilling, the boreholes were backfilled with auger cuttings.

The drill crew prepared a field log of each boring. These logs included visual classifications of the materials encountered during drilling and the driller's interpretation of the subsurface conditions between samples. The boring logs included with this report represent the engineer's interpretation of the field logs and include modifications based on laboratory observation and tests of the samples.

Geophysical (ReMi) Testing Description

Terracon used a seismic refraction system consisting of a seismograph and using a linear array of 24 geophones to perform a site-specific seismic class survey. Two tests were performed in mutually perpendicular directions (approximately north-south and east-west lines) within the site. Refraction microtremors (ReMi) produced by ambient seismic noise were recorded. These data were processed to derive a shear wave profile and an average shear-wave velocity along the array for a corresponding depth of about 100 feet. The test results are presented in this appendix as Exhibits A-13 and 14.

Page 1 of 2

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

<div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">GRAPHIC LOG</div>	LOCATION See Exhibit A-2		DEPTH <div>(Ft.)</div>	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	Northing: 293735.6 Easting: 588262.8	ELEVATION (Ft.)								
<div style="background-color: #cccccc;"></div>	1.0	ASPHALT CONCRETE , approximately 4.5 in. asphalt then 2.5 in. aggregate base course then 3 in. poor asphalt then 1 in. aggregate base course	629		X	15	2-4-5 N=9	2.5-3.5	1	18
	7.5	FILL - LEAN CLAY (CL) , trace sand and gravel, brown to grayish-brown			X	18	3-4-5 N=9	1.5-2.5	2	20
<div style="background-color: #d3d3d3;"></div>	12.0	FILL - SANDY LEAN CLAY TOPSOIL (CL) , trace gravel and roots, black	622.5		X	12	3-4	1.5	3A	21
					X	6	6 N=10	1.0	3B	22
	18.0	FILL - LEAN CLAY (CL) , trace sand and gravel, dark gray to gray	618		X	18	4-5-6 N=11	2.0	4	25
<div style="background-image: linear-gradient(to top right, transparent 49%, blue 49% 51%, yellow 51% 53%, black 53%); background-size: 10px 10px;"></div>	34.5	SANDY SILT (ML) , trace clay, gray, loose to medium dense occasional gray lean clay seams encountered throughout	612		X	18	4-3-4 N=7	1.25	5	28
<div style="background-color: #ffff00;"></div>										
<div style="background-color: #d3d3d3;"></div>										
<div style="background-color: #ffffff;"></div>										
<div style="background-color: #d3d3d3;"></div>										
<div style="background-color: #d3d3d3;"></div>										
<div style="background-color: #d3d3d3;"></div>										
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<div style="background-color: #d3d3d3;"></div>										
<div style="background-color: #d3d3d3;"></div>										
<div style="background-color: #d3d3d3;"></div>										

Hammer Type: Cathead and Rope

Notes:

Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-1

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293735.6 Easting: 588262.8</p> <p>Surface Elev.: 630.0 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	42.0 SANDY LEAN CLAY (CL) , gray, very stiff (<i>continued</i>) 588								
	POORLY GRADED SAND (SP) , trace silt and gravel, fine to medium grained, gray, dense	45		X	18	11-15-19 N=34		11	
	47.0 SILTY SAND (SM) , trace clay and gravel, fine grained, gray, medium dense 583								
	SANDY LEAN CLAY (CL) , trace gravel, gray, stiff	50		X	18	12-11-11 N=22		12	
	52.0 SANDY LEAN CLAY (CL) , trace gravel, gray, stiff 578								
	55.0 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard 575	55		X	12	4-6	1.5	13A	14
				X	6	9 N=15	4.5+	13B	16
	harder drilling conditions encountered at 61 ft	60		X	18	8-11-14 N=25	3.5-4.25	14	18
		65		X	18	11-16-23 N=39	4.5+	15	
		70		X	18	14-20-26 N=46	4.5+	16	
		75		X	18	11-17-20 N=37	4.5+	17	18
	75.5 Boring Terminated at 75.5 Feet 554.5								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 20' - 4-1/4" Hollow Stem Auger (HSA)
20 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

18' While Drilling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/27/2015

Boring Completed: 4/27/2015

Drill Rig: CME-45

Driller: J&J Soil Testing

Project No.: MR155043

Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-2

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293730.7 Easting: 588359.4</p> <p>Surface Elev.: 631.5 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 5 in. asphalt then 3 in. aggregate base course	630.5							
	2.0 FILL - SILTY SAND WITH GRAVEL (SM) , fine to coarse grained, dark brown	629.5		X	7	4-3-3 N=6		1	18
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown sample 1 was disturbed due to coarse gravel in sampler tip; no hand penetrometer test performed			X	18	4-5-5 N=10	2.0	2	22
				X	18	5-5-6 N=11	2.5-4.5+	3	19
				X	18	4-5-6 N=11	3.5	4	19
	12.0 FILL - SANDY LEAN CLAY TOPSOIL (CL) , trace gravel and roots, black	619.5							
	16.0 FILL - CLAYEY SAND WITH GRAVEL (SC) , trace silt, brown	615.5		X	12	6-8-9 N=17	2.0	5	35
	21.5 SANDY LEAN CLAY (CL) , trace gravel, gray, stiff	610		X	10	10-11-13 N=24		6	
	27.0 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard	604.5		X	18	7-8-9 N=17	1.75	7	15
	34.0 SANDY SILT (ML) , trace clay, gray, medium dense	597.5		X	18	6-8-11 N=19	2.5-4.25	8	17
	37.0 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard	594.5		X	18	16-11-11 N=22		9	
				X	18	5-9-13 N=22	2.5-4.5	10	12

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 15' - 4-1/4" Hollow Stem Auger (HSA)
15 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

20' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/28/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 4/28/2015

Driller: J&J Soil Testing

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-2

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2 Northing: 293730.7 Easting: 588359.4 Surface Elev.: 631.5 (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	DEPTH ELEVATION (Ft.)								
	41.0 590.5 POORLY GRADED SAND (SP) , trace silt and gravel, fine to medium grained, gray, dense								
	45			X	18	16-16-16 N=32		11	
	47.0 584.5 SILTY SAND (SM) , trace clay and gravel, fine grained, gray, medium dense occassional lean clay seams encountered throughout								
	50			X	18	7-6-6 N=12		12	
	55			X	18	5-5-5 N=10		13	
	60			X	18	6-8-7 N=15		14	
	65			X	6	5-7-6 N=13		15	
	67.0 564.5 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard								
	70			X	18	8-11-15 N=26	3.75	16	10
	75 556 Boring Terminated at 75.5 Feet			X	18	8-14-17 N=31	4.5+	17	18

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 15' - 4-1/4" Hollow Stem Auger (HSA)
15 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

20' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/28/2015

Boring Completed: 4/28/2015

Drill Rig: CME-45

Driller: J&J Soil Testing

Project No.: MR155043

Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-3

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	Northing: 293617 Easting: 588451.6								
	Surface Elev.: 637.5 (Ft.)								
	DEPTH	ELEVATION (Ft.)							
	1.0 ASPHALT CONCRETE , approximately 6 in. asphalt then 3 in.	636.5							
	1.5 aggregate base course	636							
	FILL - SANDY SILT WITH GRAVEL (ML) , dark brown			X	0	5-4-4 N=8		1	15
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown								
		5		X	8	9-19-22 N=41	4.5+	2	14
				X	9	17-12-14 N=26	2.0	3	22
		10		X	18	6-8-8 N=16	4.5+	4	23
		15		X	18	6-6-7 N=13	3.5	5	19
	17.5 FILL - SANDY LEAN CLAY TOPSOIL (CL) , trace roots, black	620							
	19.5 FILL - SANDY LEAN CLAY (CL) , trace gravel, greenish gray	618		X	6	3	0.5	6A	36
				X	12	5-6 N=11	2.5-3.5	6B	25
	22.5 LAMINATED SILT AND CLAY (CL-ML) , trace sand, gray, very stiff	615							
		25		X	18	6-6-11 N=17	2.5	7	19
		30		X	18	9-10-11 N=21	3.25	8	12
	31.0 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff	606.5							
		35		X	18	7-8-9 N=17	3.75	9	15
		40		X	18	10-15-17 N=32		10	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon
completion.

See Exhibit A-3 for description of field
procedures.
See Appendix B for description of laboratory
procedures and additional data (if any).
See Appendix C for explanation of symbols and
abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

22.5' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/4/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/6/2015

Driller: J&J Soil Testing

Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-3

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293617 Easting: 588451.6</p> <p>Surface Elev.: 637.5 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	<p>POORLY GRADED SAND WITH SILT (SP), trace clay and gravel, fine to medium grained, gray, dense (<i>continued</i>)</p> <p>occasional lean clay and silt seams encountered throughout</p>	45.0							
	<p>SILTY CLAY (CL-ML), trace sand and gravel, gray, stiff to very stiff</p> <p>sample 12 was disturbed due to coarse gravel in sampler tip; no hand penetrometer test performed</p>	592.5							
		45		X	12	4-10		11A	
					6	12 N=22	1.75	11B	22
		50		X	12	6-7-7 N=14		12	13
		55		X	15	8-9-10 N=19	2.5	13	10
		57.5							
	<p>SANDY SILT (ML), trace clay and gravel, gray, loose to medium dense</p> <p>occasional lean clay and fine sand seams encountered throughout</p>	580							
		60		X	18	12-12-11 N=23		14	16
		65		X	18	5-5-5 N=10		15	15
		70		X	18	2-3-5 N=8		16	22
		73.0							
	<p>POORLY GRADED SAND (SP), trace silt, gray, dense</p> <p>harder drilling conditions encountered at 73 ft</p>	564.5							
		75.5		X	18	17-17-17 N=34		17	
	Boring Terminated at 75.5 Feet	562							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

22.5' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/4/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/6/2015

Driller: J&J Soil Testing

Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-4

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293528.9 Easting: 588443.8</p> <p>Surface Elev.: 641.4 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 6 in. asphalt then 2 in. aggregate base course then 3 in. poor asphalt	640.5							
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown			X	7	3-4-5 N=9	3.0-4.0	1	16
		5		X	18	8-12-17 N=29	4.5+	2	18
				X	18	5-7-8 N=15	3.5-4.5+	3	21
		10		X	18	8-8-9 N=17	4.5+	4	20
		15		X	12	2-4-7 N=11	1.25-2.5	5	29
	17.5 SANDY SILTY CLAY (CL-ML) , trace gravel, brown, medium stiff	624							
	sample 6 was disturbed due to coarse gravel in sampler tip; no hand penetrometer test performed			X	10	2-2-4 N=6		6	22
	22.5 SANDY SILT (ML) , trace clay, brown, medium dense	619							
		25		X	18	8-8-13 N=21		7	15
	27.5 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff	614							
		30		X	18	5-6-8 N=14	3.25	8	13
		35		X	18	6-8-9 N=17	2.0-2.5	9	16
	36.0 SANDY SILT (ML) , trace clay, gray, medium dense	605.5							
	occasional lean clay seams encountered throughout			X	18	9-7-11 N=18		10	16
		40							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

17.5' While Drilling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/6/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/7/2015

Driller: J&J Soil Testing

Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-4

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	Northing: 293528.9 Easting: 588443.8 Surface Elev.: 641.4 (Ft.) DEPTH ELEVATION (Ft.)								
	SANDY SILT (ML) , trace clay, gray, medium dense (<i>continued</i>)								
		45		X	18	9-9-7 N=16		11	
	47.5	50		X	18	7-8-11 N=19	2.25-3.25	12	14
	LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard	55		X	18	11-20-19 N=39	4.5+	13	15
		60		X	18	13-18-39 N=57	4.5+	14	17
		65		X	6	10-19-29 N=48	4.5+	15	10
	68.0	70		X	18	6-7-9 N=16		16	
	SANDY SILT (ML) , trace clay and gravel, gray, medium dense easier drilling conditions encountered at 68 ft	75		X	18	12-12-11 N=23		17	
	75.5								
	Boring Terminated at 75.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon
completion.

See Exhibit A-3 for description of field
procedures.
See Appendix B for description of laboratory
procedures and additional data (if any).
See Appendix C for explanation of symbols and
abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

17.5' While Drilling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/6/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/7/2015

Driller: J&J Soil Testing

Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-5

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293810.6 Easting: 588345.3</p> <p>Surface Elev.: 627.7 (Ft.)</p> <p>DEPTH</p> <p>ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 6.5 in. asphalt then 2.5 in.	626.5							
	1.5 aggregate base course	626							
	FILL - SILTY SAND WITH GRAVEL (SM) , fine to coarse grained, dark brown			X	18	5-7-7 N=14	4.5+	1	15
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown								
		5		X	18	3-8-6 N=14	3.5-4.0	2	19
				X	18	3-3-4 N=7	1.5-2.0	3	31
		10		X	18	2-3-3 N=6	1.5	4	32
	12.0 LEAN CLAY (CL) , trace sand and gravel, brown with gray mottling, very stiff	615.5							
		15		X	18	7-9-11 N=20	3.0-3.5	5	19
	17.5 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff	610							
		20		X	18	5-6-7 N=13	2.0-2.5	6	18
		25		X	18	5-7-9 N=16	3.0	7	16
	28.5 SILTY SAND (SM) , trace clay, fine grained, gray, loose	599							
		30		X	18	4-4-3 N=7		8	
	32.0 POORLY GRADED SAND (SP) , trace silt, fine to medium grained, gray, medium dense	595.5							
		35		X	18	9-10-11 N=21		9	
	36.0 SANDY SILT (ML) , trace clay, gray, loose	591.5							
		40		X	18	5-4-4 N=8		10	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 15' - 4-1/4" Hollow Stem Auger (HSA)
15 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

12' While Drilling (Perched in Fill)

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/30/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 4/30/2015

Driller: J&J Soil Testing

Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-5

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northings: 293810.6 Easting: 588345.3</p> <p>Surface Elev.: 627.7 (Ft.)</p> <p>DEPTH</p> <p>ELEVATION (Ft.)</p>								
	SANDY SILT (ML) , trace clay, gray, loose (<i>continued</i>)								
	44.5 583								
	POORLY GRADED SAND (SP) , trace silt, fine to medium grained, gray, medium dense	45		X	10	10-8-8 N=16		11	
	48.5 579								
	SILTY SAND WITH GRAVEL (SM) , trace clay, fine to medium grained, gray, medium dense	50		X	14	13-6-12 N=18		12	
	53.0 574.5								
	POORLY GRADED SAND (SP) , trace silt, fine to medium grained, gray, medium dense	55		X	12	12-12-18 N=30		13	
	55.0 572.5								
	POORLY GRADED SAND WITH GRAVEL (SP) , trace silt, fine to coarse grained, gray, medium dense to dense	60		X	18	18-11-10 N=21		14	
	64.0 563.5								
	LEAN CLAY (CL) , trace sand and gravel, gray, hard	65		X	18	13-16-21 N=37	4.5+	15	13
	70.0 557.5			X	12	14-21	4.5+	16A	13
	SANDY SILT (ML) , trace clay, gray, very dense	70		X	6	30 N=51		16B	
	72.0 555.5								
	POORLY GRADED SAND (SP) , trace silt and gravel, gray, medium dense	75		X	18	15-14-15 N=29		17	
	75.5 552								
	Boring Terminated at 75.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 15' - 4-1/4" Hollow Stem Auger (HSA)
15 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

12' While Drilling (Perched in Fill)

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/30/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 4/30/2015

Driller: J&J Soil Testing

Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-6

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293707.1 Easting: 588455.8</p> <p>Surface Elev.: 632.7 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 7 in. asphalt then 2 in. aggregate base course then 2 in. poor asphalt	631.5							
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown occasional fine to medium sand and topsoil seams encountered throughout			X	10	3-3-3 N=6	1.0	1	20
		5		X	9	1-2-5 N=7	0.25-2.5	2	20
				X	18	3-4-5 N=9	0.5-3.5	3	21
		10		X	12	4-4-6 N=10	1.0-3.5	4	21
	topsoil seam encountered in sample 5								
		15		X	14	5-6-17 N=23	3.5-4.5+	5	18
	17.5 FILL - SILTY SAND WITH GRAVEL (SM) , trace clay, gray, medium dense	615							
		20		X	12	12-14-14 N=28		6	
	22.5 LEAN CLAY (CL) , trace sand and gravel, gray, stiff to very stiff occasional silt and fine sand seams encountered throughout	610							
		25		X	18	4-5-6 N=11	1.25-2.5	7	19
		30		X	18	5-5-5 N=10	2.0	8	25
	35.0 POORLY GRADED SAND WITH SILT (SP-SM) , trace clay, fine to medium grained, gray, medium dense to dense	597.5		X	12	6-8 8 N=16	3.25	9A 9B	16
		35		X	6				
		40		X	18	12-12-13 N=25		10	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 10' - 4-1/4" Hollow Stem Auger (HSA)
10 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

16.5' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/1/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/4/2015

Driller: J&J Soil Testing

Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-6

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293707.1 Easting: 588455.8</p> <p>Surface Elev.: 632.7 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	<p>POORLY GRADED SAND WITH SILT (SP-SM), trace clay, fine to medium grained, gray, medium dense to dense (<i>continued</i>)</p>								
	<p>45.5 587</p>	45		X	18	18-20-20 N=40		11	
	<p>47.0 585.5</p>								
	<p>POORLY GRADED SAND WITH GRAVEL (SP), trace silt, fine to coarse grained, gray, dense</p>								
	<p>POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), trace clay, fine to medium grained, gray, medium dense occasional lean clay seams encountered throughout</p>								
		50		X	18	15-15-11 N=26		12	
		55		X	14	19-13-16 N=29		13	
		60		X	18	8-12-16 N=28	3.5-4.5+	14	13
		65		X	18	17-17-19 N=36	4.5+	15	16
		70		X	18	15-20-31 N=51	4.5+	16	14
		75		X	18	12-15-17 N=32	4.5+	17	17
	<p>75.5 557</p> <p>Boring Terminated at 75.5 Feet</p>								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 10' - 4-1/4" Hollow Stem Auger (HSA)
10 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

16.5' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/1/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/4/2015

Driller: J&J Soil Testing

Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-7

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293643.1 Easting: 588369.7</p> <p>Surface Elev.: 635.7 (Ft.)</p> <p>DEPTH</p> <p>ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 5 in. asphalt then 2 in. aggregate base course	634.5							
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown			X	12	3-4-4 N=8	2.25	1	20
		5		X	18	10-16-21 N=37	4.5+	2	13
				X	18	12-13-16 N=29	4.5+	3	16
		10		X	18	8-9-10 N=19	4.5+	4	17
		15		X	18	6-6-7 N=13	2.0-2.5	5	24
	17.0 LEAN CLAY (CL) , trace sand and gravel, brown with gray mottling, stiff	618.5							
	20.0 SILTY SAND (SM) , trace clay, fine grained, gray, loose	615.5	▽	X	12	4-4	1.0-1.75	6A	25
	22.0 SANDY SILT (ML) , trace clay, gray, loose to medium dense	613.5		X	6	4 N=8		6B	
		25		X	18	12-14-14 N=28		7	
	sample 7 & 8 composite: liquid limit (LL) = 15, plastic limit (PL) = 13, plasticity index (PI) = 2	30		X	18	5-5-5 N=10		8	
		35		X	12	2-3-4 N=7		9	0
	sample 9 & 10 composite: % sand = 4, % silt = 82, % clay = 14	40		X	13	10-12-6 N=18		10	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 10' - 4-1/4" Hollow Stem Auger (HSA)
10 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ 20' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/30/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/1/2015

Driller: J&J Soil Testing

Exhibit: A-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-7

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293643.1 Easting: 588369.7</p> <p>Surface Elev.: 635.7 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	<p>42.0 SANDY SILT (ML), trace clay, gray, loose to medium dense (continued) 593.5</p> <p>POORLY GRADED SAND (SP), trace silt, fine to medium grained, gray, medium dense</p>	45			18	11-11-11 N=22		11	
	<p>49.0 586.5</p> <p>SANDY LEAN CLAY WITH GRAVEL (CL), gray, very stiff occasional cobbles and boulders encountered throughout</p> <p>sample 13 was disturbed due to coarse gravel in sampler tip; no hand penetrometer test performed</p>	50			12	4-7-39 N=46	2.25	12	24
	<p>55.5 580</p> <p>POORLY GRADED SAND WITH GRAVEL (SP), trace silt, gray, very dense</p> <p>no recovery of sample 14 due to coarse gravel in sampler tip; strata description based on driller's observations</p>	55			18	18-18-17 N=35		13	12
	<p>62.0 573.5</p> <p>LEAN CLAY (CL), trace sand and gravel, gray, hard</p>	60			0	40-60		14	
	<p>66.0 569.5</p> <p>SANDY SILT (ML), trace clay, gray, medium dense</p>	65			18	12-15-20 N=35	4.5+	15	10
		70			18	4-6-7 N=13		16	
	<p>75.5 560</p> <p>Boring Terminated at 75.5 Feet</p>	75			15	14-11-12 N=23		17	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 10' - 4-1/4" Hollow Stem Auger (HSA)
10 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

20' While Sampling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 4/30/2015

Boring Completed: 5/1/2015

Drill Rig: CME-45

Driller: J&J Soil Testing

Project No.: MR155043

Exhibit: A-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-8

Page 1 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293579.3 Easting: 588531.4</p> <p>Surface Elev.: 638.5 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	1.0 ASPHALT CONCRETE , approximately 6 in. asphalt then 6 in. aggregate base course	637.5							
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown			X	10	3-4-4 N=8	2.5	1	17
	4.5	634		X	4	9	4.5+	2A	16
	5.5 FILL - SANDY LEAN CLAY TOPSOIL (CL) , trace gravel and brick rubble, black	633		X	10	35-20 N=55		2B	10
	FILL - LEAN CLAY (CL) , trace sand and gravel, brown			X	18	6-7-11 N=18	1.5-2.5	3	17
				X	18	8-11-12 N=23	4.25-4.5+	4	18
				X	18	6-8-10 N=18	3.0-4.5+	5	24
				X	15	3-3-3 N=6	1.25-3.5	6	23
	22.5 FILL - SANDY LEAN CLAY TOPSOIL (CL) , trace roots, black	616		X	18	6-9-10 N=19	2.0	7	39
	26.0 LEAN CLAY (CL) , trace sand and gravel, gray, very stiff occasional silt and fine sand seams encountered throughout	612.5	▽						
	31.0 SANDY SILT (ML) , trace clay, gray, loose to dense occasional lean clay seams encountered throughout	607.5		X	18	6-8-9 N=17	3.25	8	18
				X	18	12-13-14 N=27		9	15
				X	6	3-3-3 N=6		10	

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ 26' While Drilling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/7/2015

Drill Rig: CME-45

Project No.: MR155043

Boring Completed: 5/7/2015

Driller: J&J Soil Testing

Exhibit: A-11

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

BORING LOG NO. B-8

Page 2 of 2

PROJECT: VA Hospital Lot 7 Parking Garage

CLIENT: Guidon Design, LLC
Indianapolis, Indiana

SITE: 5000 W. National Ave.
Milwaukee, WI

GRAPHIC LOG	LOCATION See Exhibit A-2	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	HAND PENETROMETER (tsf)	SAMPLE NUMBER	WATER CONTENT (%)
	<p>Northing: 293579.3 Easting: 588531.4</p> <p>Surface Elev.: 638.5 (Ft.)</p> <p>DEPTH ELEVATION (Ft.)</p>								
	SANDY SILT (ML) , trace clay, gray, loose to dense <i>(continued)</i>								
		45		X	18	12-13-13 N=26		11	18
		50		X	18	15-16-14 N=30		12	
	54.5	55		X	6	16 13-10 N=23	2.0	13A 13B	18
	LEAN CLAY (CL) , trace sand and gravel, gray, very stiff to hard								
		60		X	18	9-10-13 N=23	3.5-4.5+	14	15
	62.5	65		X	18	3-3-4 N=7		15	
	SANDY SILT (ML) , trace clay, gray, loose to medium dense occasional lean clay and fine sand seams encountered throughout								
		70		X	18	7-7-7 N=14		16	15
		75		X	18	8-8-9 N=17		17	
	Boring Terminated at 75.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Cathead and Rope

Advancement Method:
0 to 5' - 4-1/4" Hollow Stem Auger (HSA)
5 to 75.5' - Rotary Wash Methods with 3-7/8" Rotary Bit,
HSA used as temporary casing

Abandonment Method:
Boring backfilled with cement-bentonite grout upon
completion.

See Exhibit A-3 for description of field
procedures.
See Appendix B for description of laboratory
procedures and additional data (if any).
See Appendix C for explanation of symbols and
abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

26' While Drilling

Terracon
9856 South 57th Street
Franklin, Wisconsin

Boring Started: 5/7/2015

Drill Rig: CME-45

Project No.: MR155043

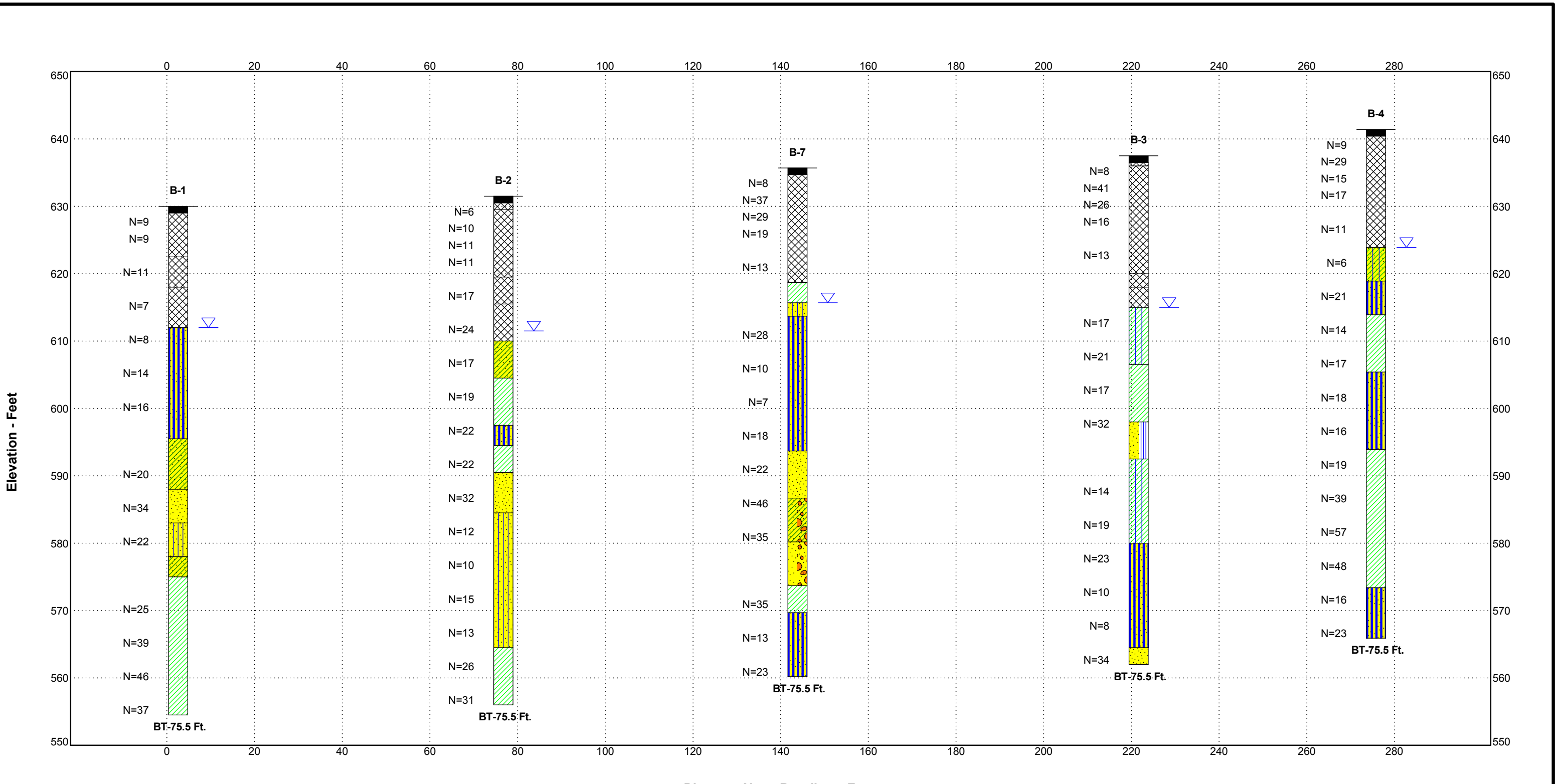
Boring Completed: 5/7/2015

Driller: J&J Soil Testing

Exhibit: A-11

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL MR155043 BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. SMART FENCE MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15



Explanation

Moisture Content — %w

Sampling (See General Notes)

Water Level Reading at time of drilling.

Water Level Reading after drilling.

B-1 — Borehole Number

LL PL — Liquid and Plastic Limits

— Borehole Lithology

AR BT — Borehole Termination Type

Asphalt

Fill (made ground)

Sandy Silt

Sandy Lean Clay

Poorly-graded Sand

Silty Sand

Lean Clay

Silty Clay

Poorly-graded Sand with Silt

Sandy Silty Clay

NOTES:

See Exhibit A-3 for orientation of soil profile.

See General Notes in Appendix C for symbols and soil classifications.

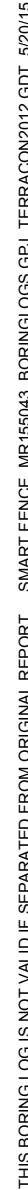
Soils profile provided for illustration purposes only.

Soils between borings may differ

AR - Auger Refusal

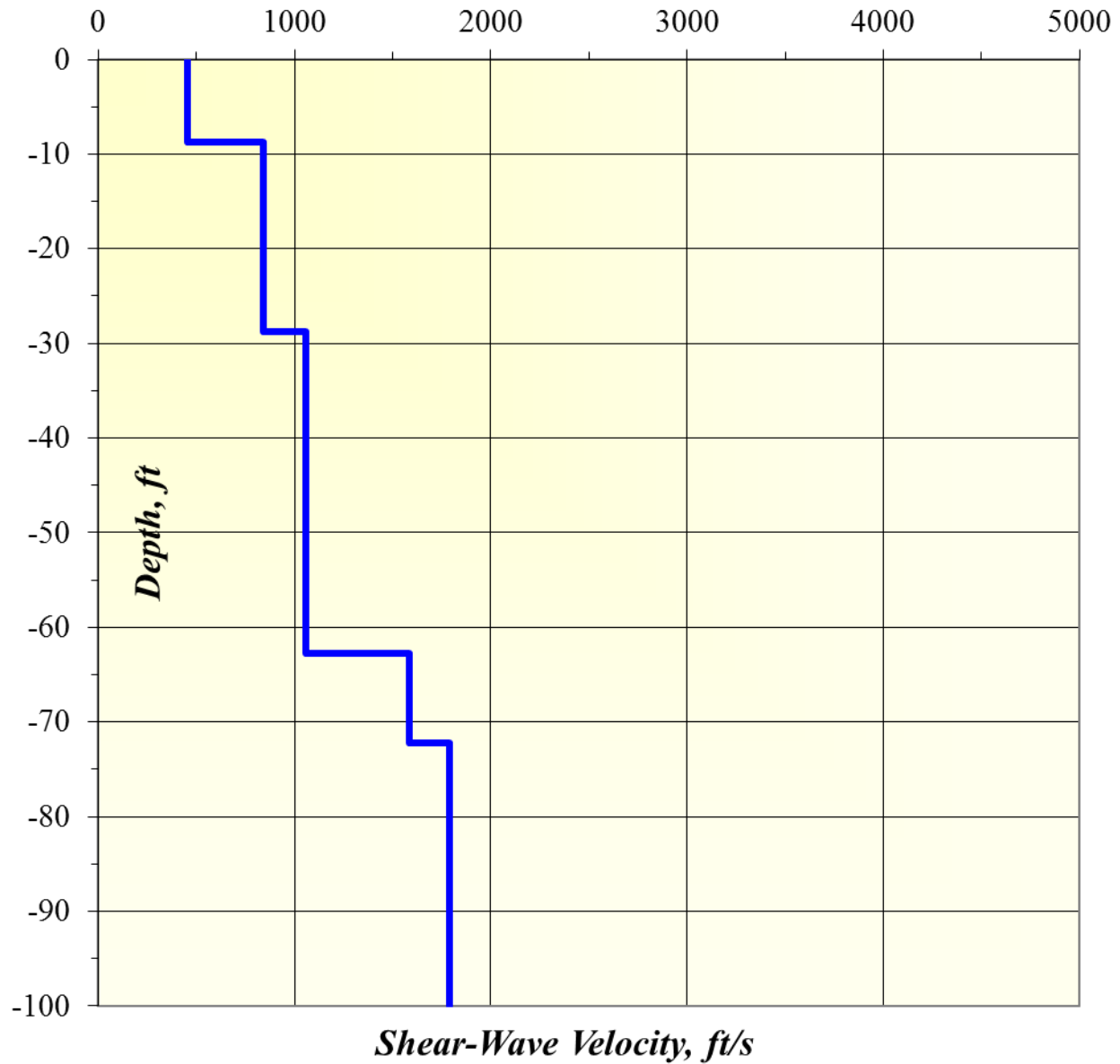
BT - Boring Termination

Project Manager:	Project No.: MR155043	Terracon 9856 South 57th Street Franklin, Wisconsin PH. 414-423-0255 FAX. 414-423-0566	SUBSURFACE PROFILE Section A-A' VA HOSPITAL LOT 7 PARKING GARAGE 5000 W. NATIONAL AVE. MILWAUKEE, WI	EXHIBIT
Drawn by: JDW	Scale: N.T.S.			A-12
Approved by: PAT	File Name: MR155043			
Date: 06/2015				




Line 1 - North-South Profile

Vs Model

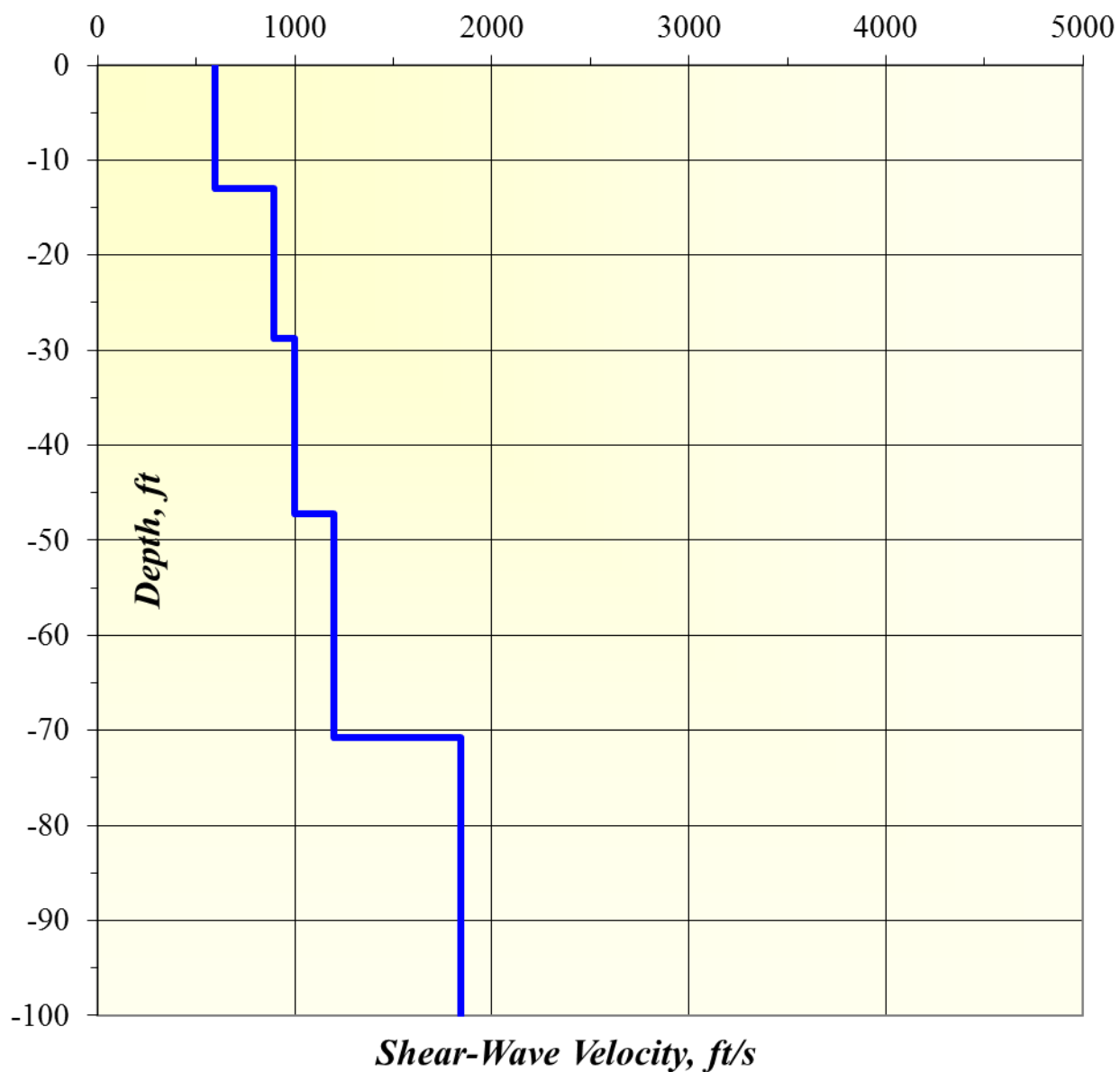


Average Shear Wave Velocity to 100 ft (rounded) = 1040 ft/s


Project Manager: JDW	Project No. MR155043	 <p>9856 South 57th Street Franklin, Wisconsin 53132 PH. (414) 423-0255 FAX. (414) 423-0566</p>	Shear Wave Profile	EXHIBIT #
Drawn by: RMK	Scale: N.T.S.		VA HOSPITAL LOT 7 PARKING GARAGE	A-14
Checked by: RAK	File Name:		5000 WEST NATIONAL AVENUE	
Approved by: RMK	Date: 06/2015		MILWAUKEE, WISCONSIN	

Line 2 - East-West Profile

Vs Model



Average Shear Wave Velocity to 100 ft (rounded) = 1070 ft/s

Project Manager: JDW	Project No. MR155043	 <p>9856 South 57th Street Franklin, Wisconsin 53132 PH. (414) 423-0255 FAX. (414) 423-0566</p>	Shear Wave Profile	EXHIBIT #
Drawn by: RMK	Scale: N.T.S.		VA HOSPITAL LOT 7 PARKING GARAGE	A-15
Checked by: RAK	File Name:		5000 WEST NATIONAL AVENUE	
Approved by: RMK	Date: 06/2015		MILWAUKEE, WISCONSIN	

APPENDIX B
LABORATORY TESTING

Geotechnical Engineering Report

Parking Garage at VA Hospital ■ Milwaukee, Wisconsin
June 2, 2015 ■ Terracon Project No. MR155043



Laboratory Testing

The soil samples obtained from the borings were tested in the laboratory to measure their natural water content. Pocket penetrometer was used to help estimate the unconfined compressive strength of other cohesive samples. Grain size analysis and Atterberg limits test were also performed on samples from Boring B-7 to evaluate texture and plasticity. The test results are provided on the boring logs in Appendix A and/or as attachments in Appendix B.

The soil samples were classified in the laboratory based on visual observation, texture, plasticity, and the limited laboratory testing described above. The soil descriptions presented on the boring logs for native soils are in accordance with the enclosed General Notes (Exhibit C-1) and Unified Soil Classification System (USCS). The estimated USCS group symbols for native soils are shown on the boring logs, and a brief description of the USCS (Exhibit C-2) is included in this report.

Laboratory electrical resistivity, pH, soluble sulfates, sulfide and soluble chloride tests were performed on selected samples to provide information to help evaluate the corrosion potential for underground pipes. Results of these tests are summarized below.

Boring No.	Composite Sample Depth (feet)	Resistivity ¹ (ohm-cm)	SOIL pH ²	Water Soluble Sulfate ³ (mg/kg)	Water Soluble Sulfides ⁴ (mg/kg)	Chlorides ⁵ (mg/kg)
B-7	1 to 15½	840	7.97	<150	<10	760

1. ASTM G-187
2. ASTM D-4972
3. AWWA T290-94
4. AWWA 4500 S2,C,D (mg/kg)
5. AWWA T291-94 (mg/kg)

ASTM D422



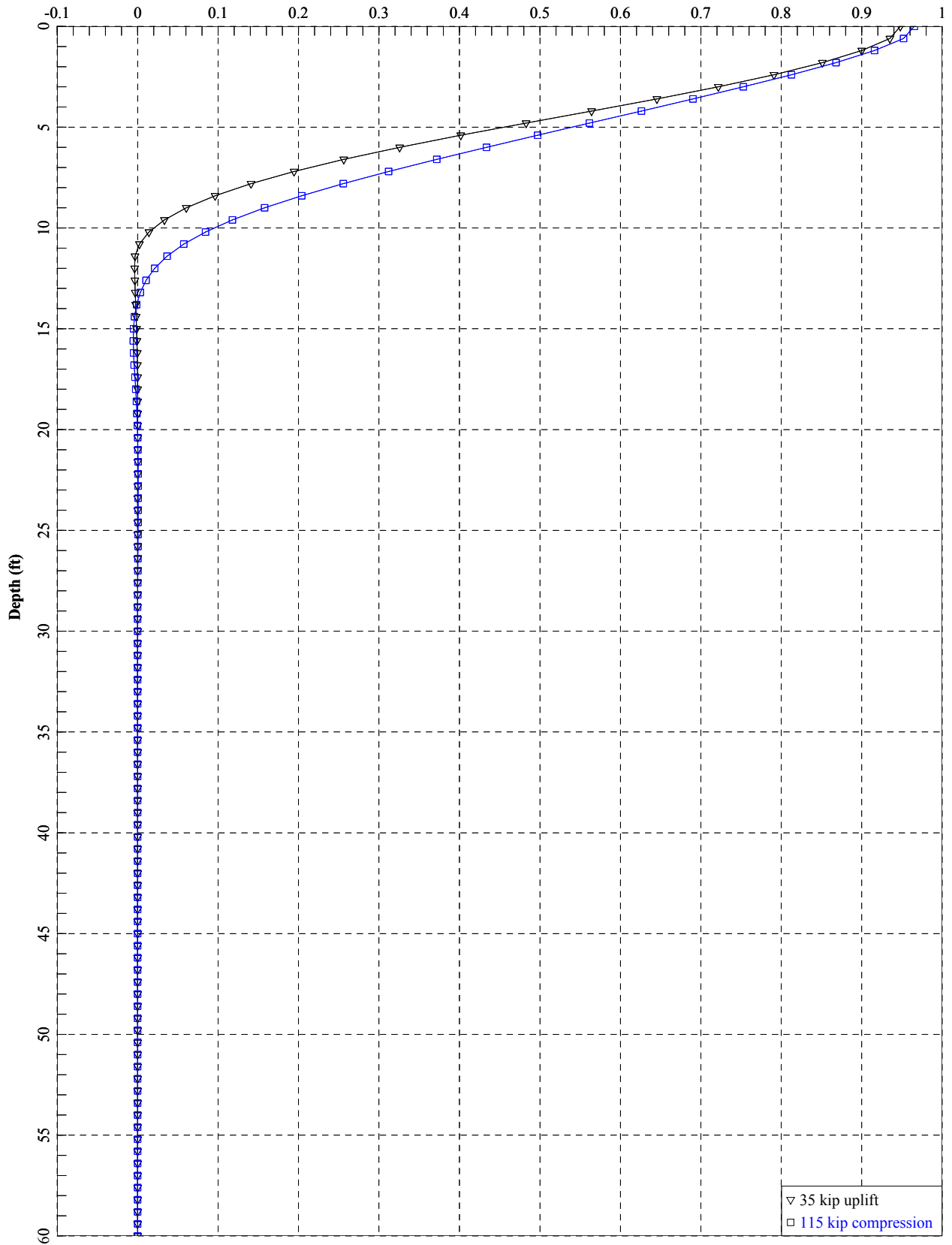
LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS-2 MR155043_BORINGLOGS.GPJ TERRACON2012.GDT 5/20/15

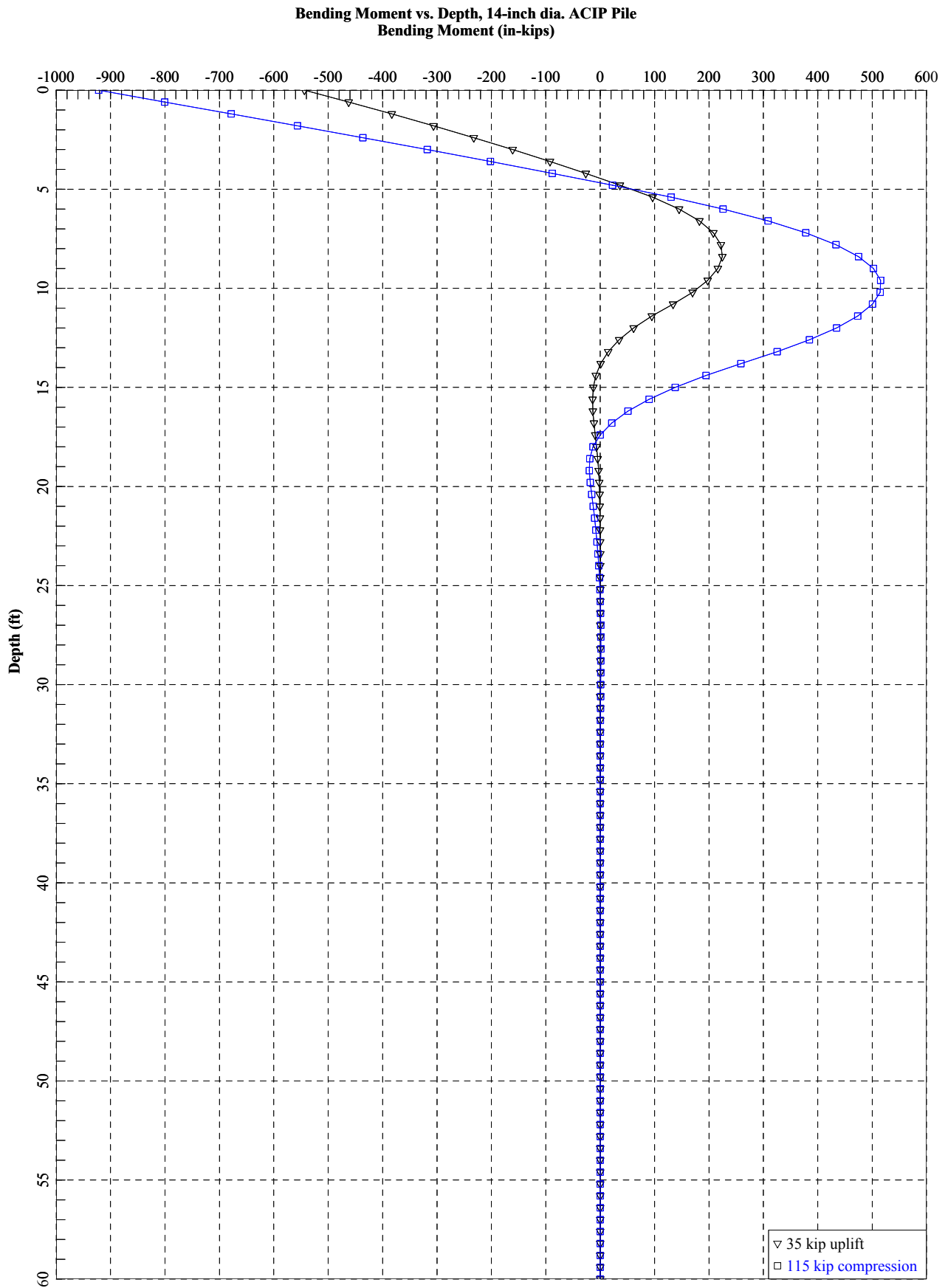
ASTM D4318

EXHIBIT: B-3

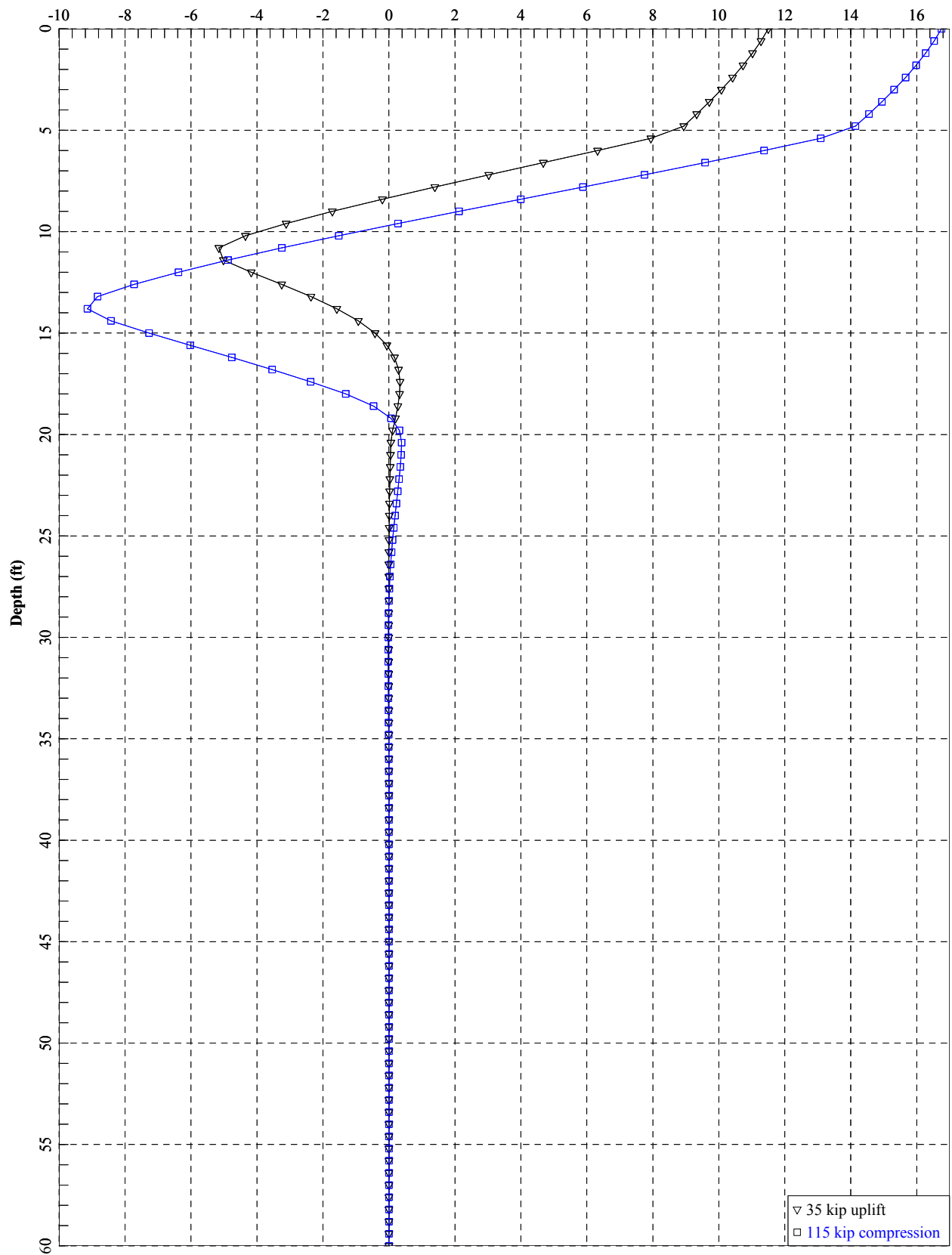
APPENDIX C
LATERAL ANALYSIS DEFLECTION, BENDING MOMENT AND
SHEAR DIAGRAMS

Deflection vs. Depth, 14-inch dia. ACIP Pile
Lateral Pile Deflection (inches)

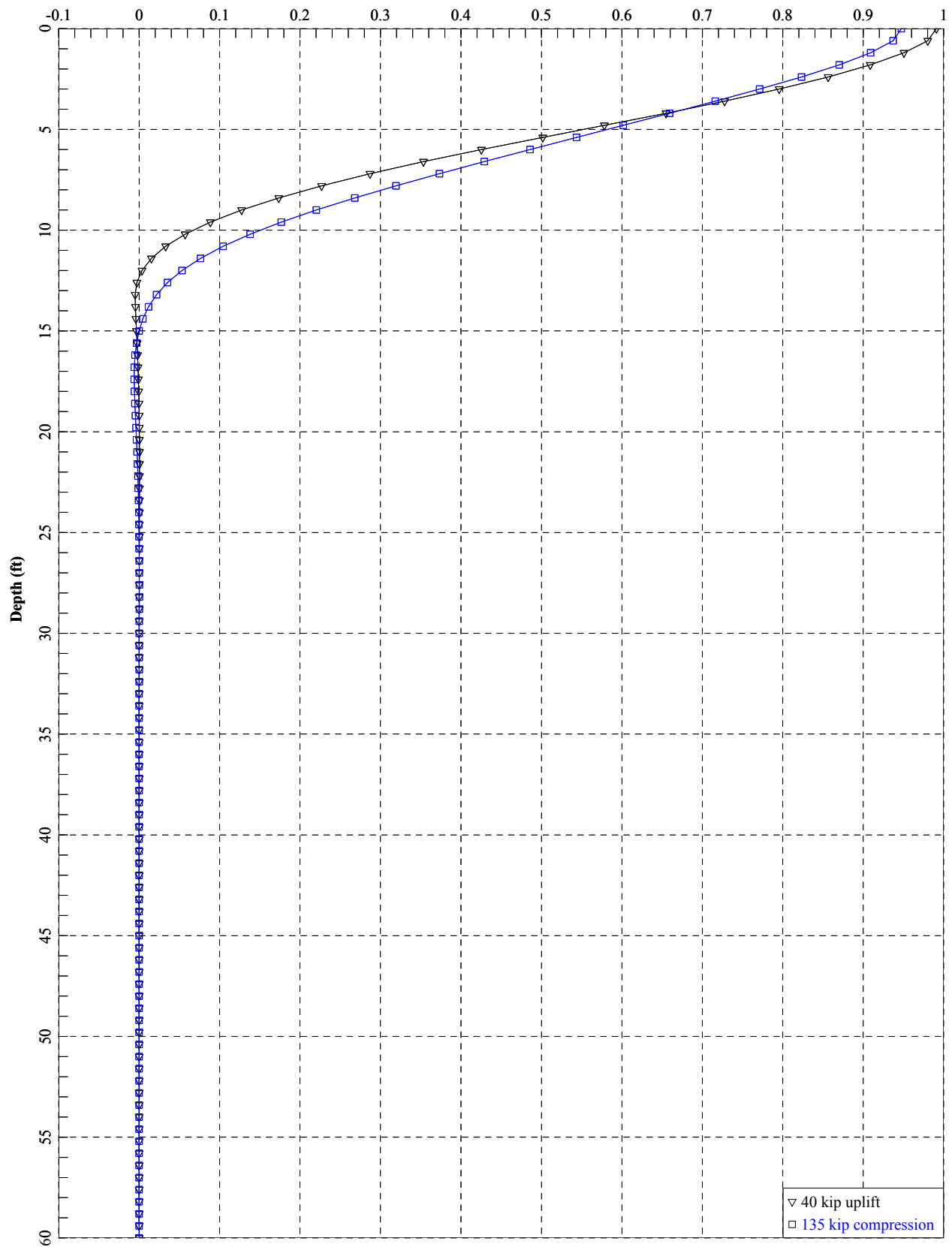


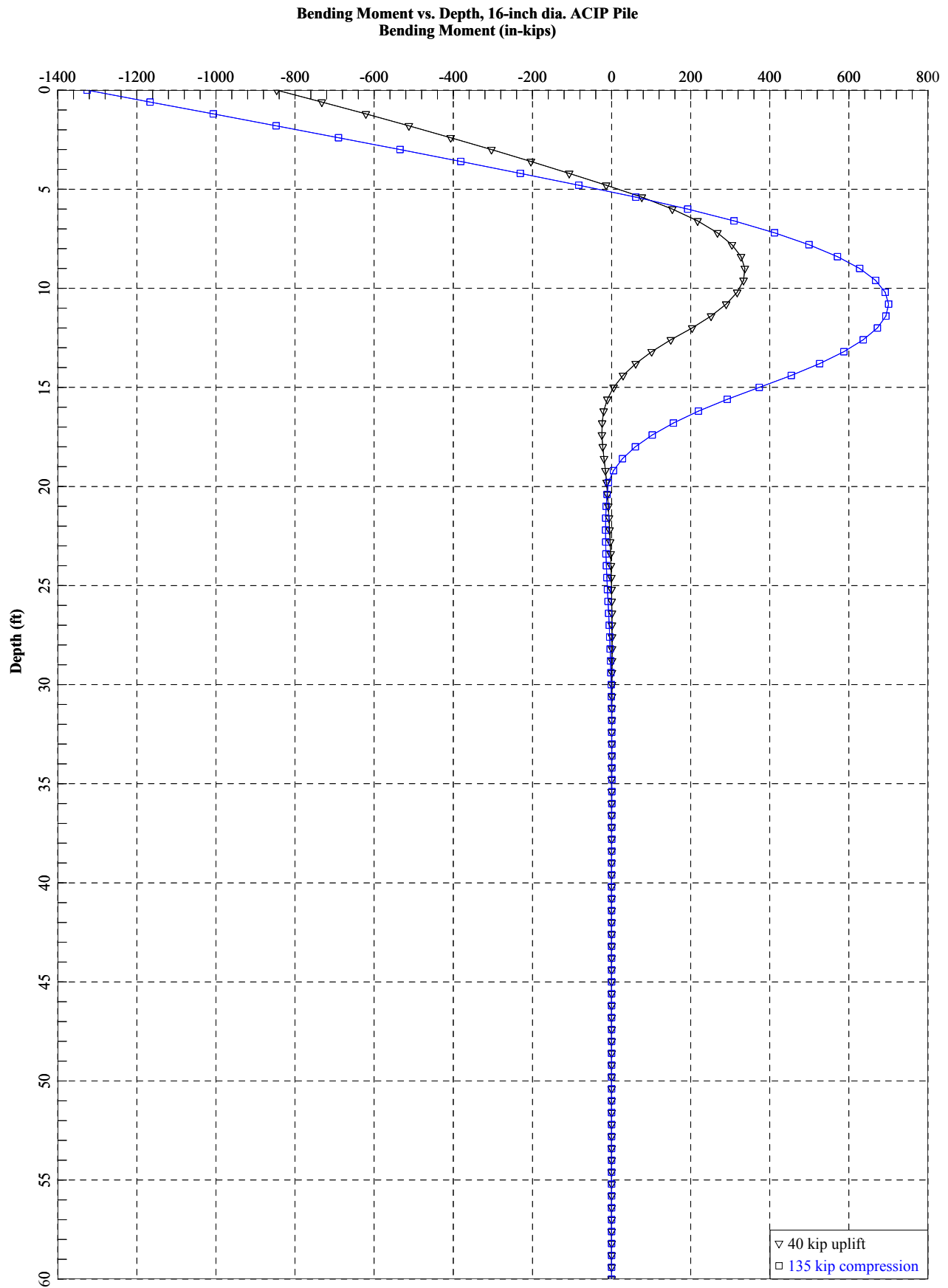


Shear Force vs. Depth, 14-inch dia. ACIP Pile
Shear Force (kips)

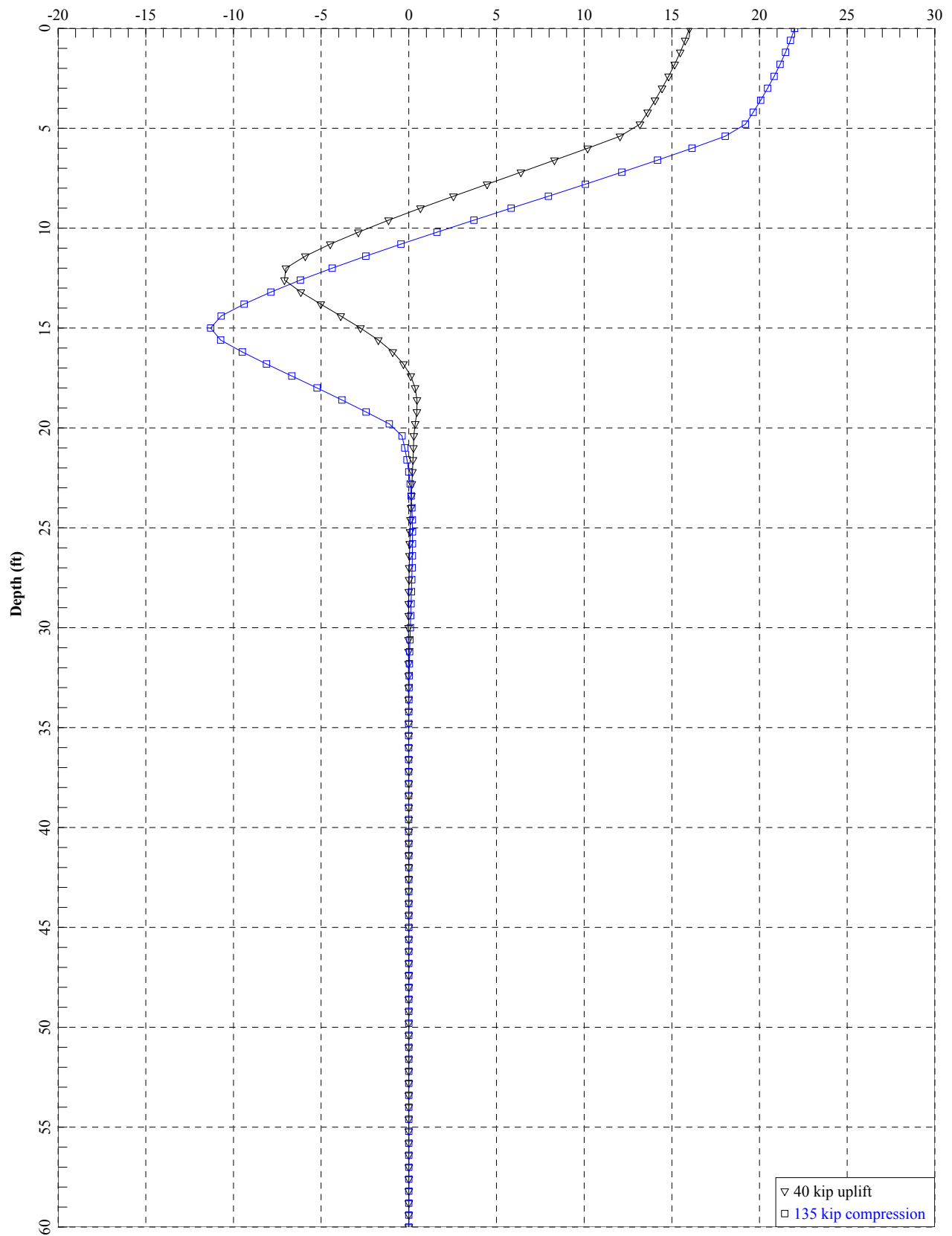


Deflection vs. Depth, 16-inch dia. ACIP Pile
Lateral Pile Deflection (inches)

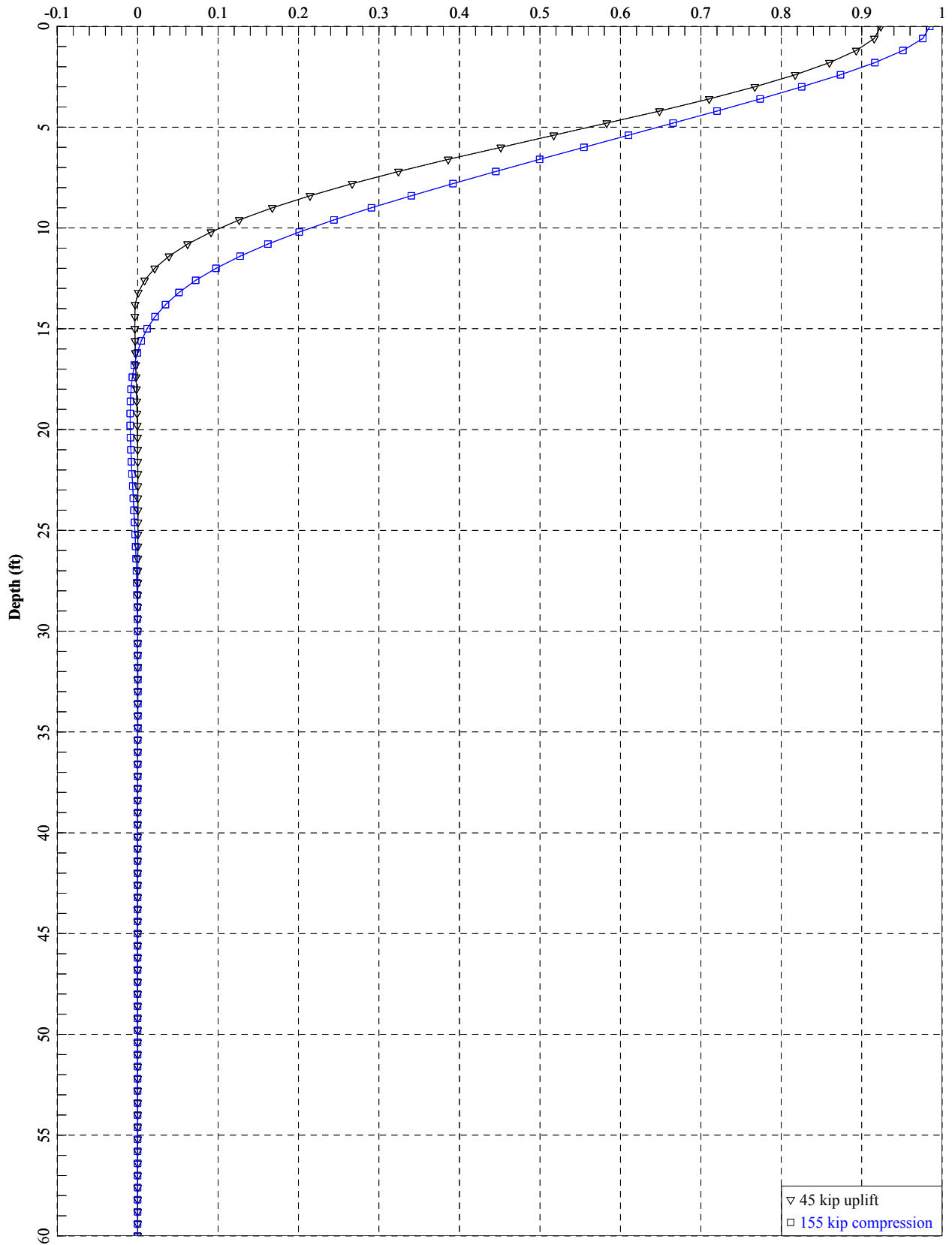


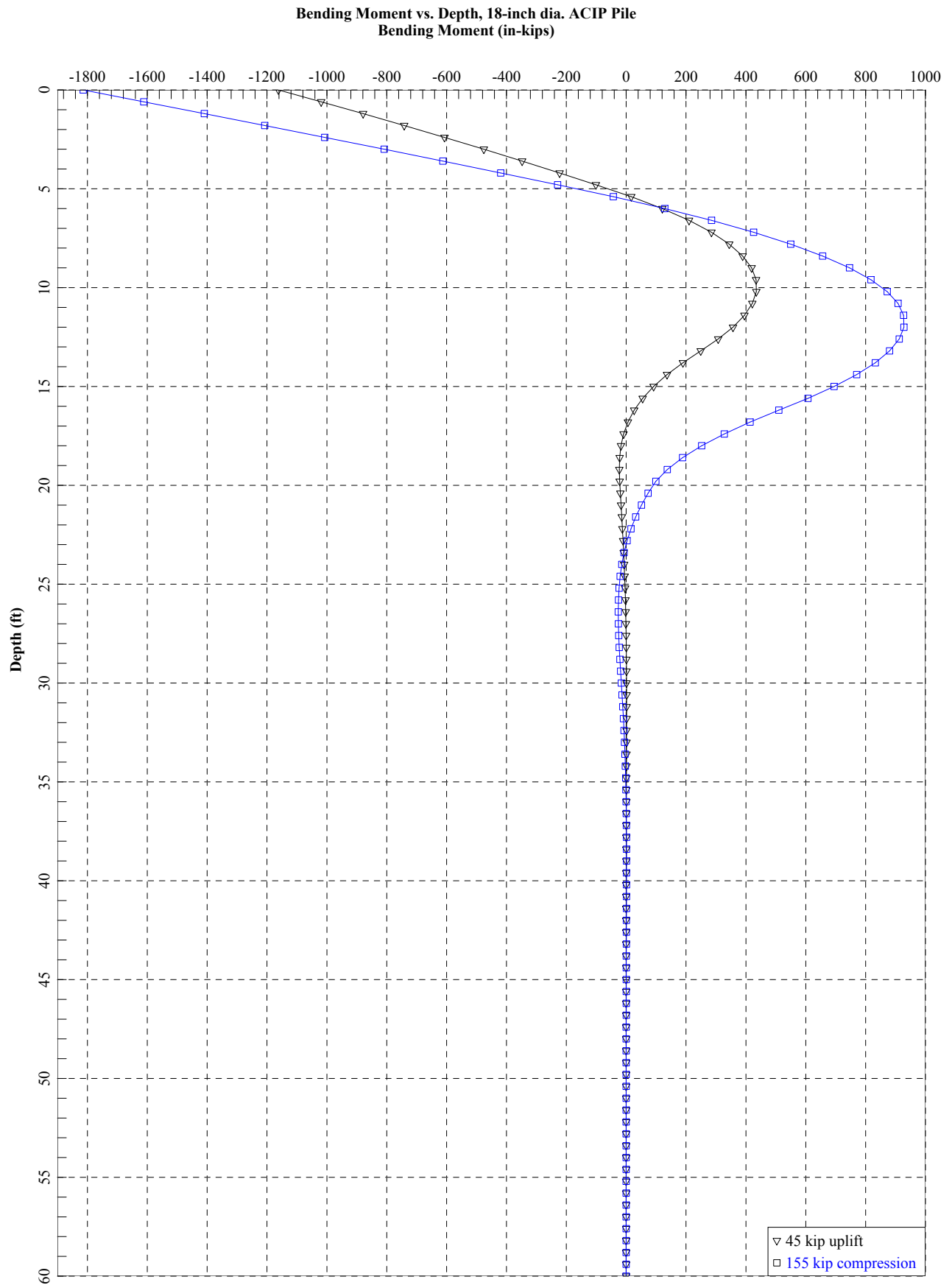


Shear Force vs. Depth, 16-inch dia. ACIP Pile
Shear Force (kips)

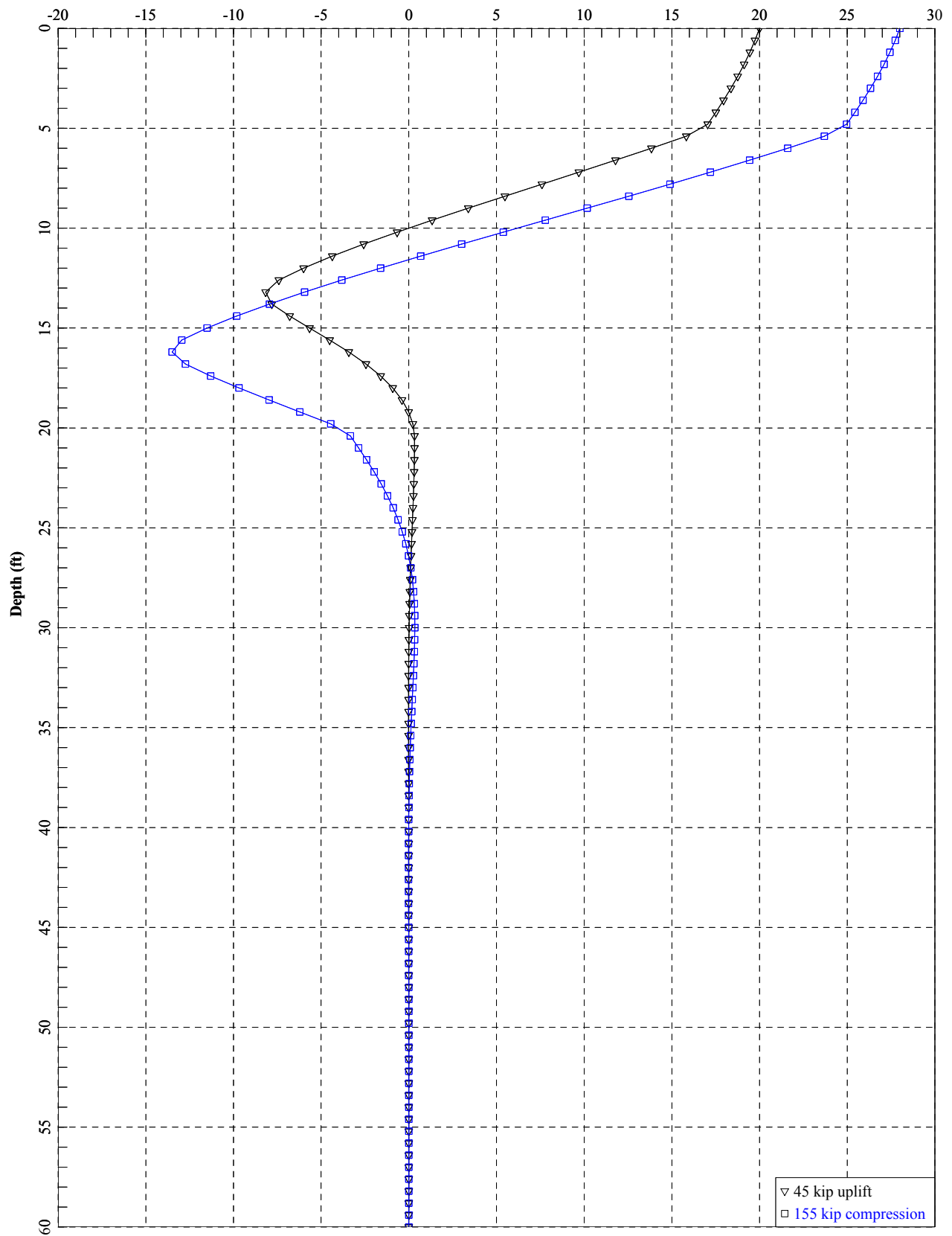


Deflection vs. Depth, 18-inch dia. ACIP Pile
Lateral Pile Deflection (inches)
















Shear Force vs. Depth, 18-inch dia. ACIP Pile
Shear Force (kips)



APPENDIX D
SUPPORTING DOCUMENTS

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP) Hand Penetrometer
					Water Level After a Specified Period of Time		(T) Torvane
					Water Level After a Specified Period of Time		(b/f) Standard Penetration Test (blows per foot)
							(PID) Photo-Ionization Detector
	Auger	Split Spoon					(OVA) Organic Vapor Analyzer

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance				BEDROCK		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, psf	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Ring Sampler Blows/Ft.	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)
	Very Loose	0 - 3	0 - 6	Very Soft	less than 500	0 - 1	< 3	< 30	< 20	Weathered
	Loose	4 - 9	7 - 18	Soft	500 to 1,000	2 - 4	3 - 4	30 - 49	20 - 29	Firm
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	1,000 to 2,000	4 - 8	5 - 9	50 - 89	30 - 49	Medium Hard
	Dense	30 - 50	59 - 98	Stiff	2,000 to 4,000	8 - 15	10 - 18	90 - 119	50 - 79	Hard
	Very Dense	> 50	≥ 99	Very Stiff	4,000 to 8,000	15 - 30	19 - 42	> 119	>79	Very Hard
				Hard	> 8,000	> 30	> 42			

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification			
					Group Symbol	Group Name ^B		
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E		GW	Well-graded gravel ^F		
			Cu < 4 and/or 1 > Cc > 3 ^E		GP	Poorly graded gravel ^F		
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH		GM	Silty gravel ^{F,G,H}		
			Fines classify as CL or CH		GC	Clayey gravel ^{F,G,H}		
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E		SW	Well-graded sand ^I		
			Cu < 6 and/or 1 > Cc > 3 ^E		SP	Poorly graded sand ^I		
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH		SM	Silty sand ^{G,H,I}		
			Fines classify as CL or CH		SC	Clayey sand ^{G,H,I}		
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above “A” line ^J		CL	Lean clay ^{K,L,M}		
			PI < 4 or plots below “A” line ^J		ML	Silt ^{K,L,M}		
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K,L,M,N}		
			Liquid limit - not dried			Organic silt ^{K,L,M,O}		
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line		CH	Fat clay ^{K,L,M}		
			PI plots below “A” line		MH	Elastic Silt ^{K,L,M}		
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K,L,M,P}		
			Liquid limit - not dried			Organic silt ^{K,L,M,Q}		
		Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

^A Based on the material passing the 3-inch (75-mm) sieve

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

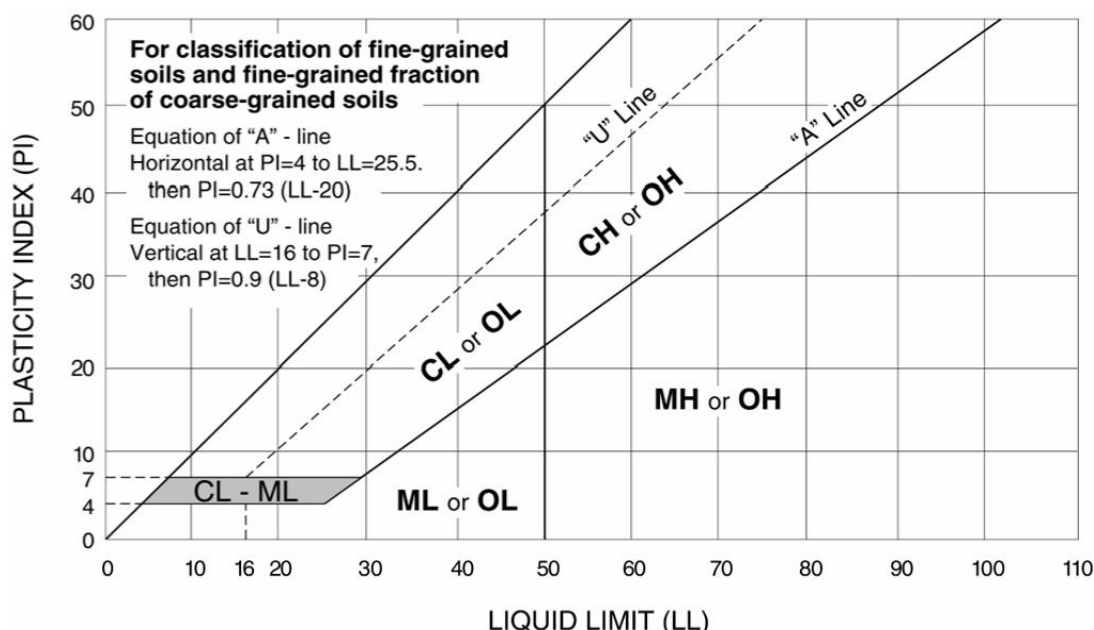
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N PI ≥ 4 and plots on or above "A" line.

^O PI < 4 or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



DRAFT ENVIRONMENTAL ASSESSMENT

FOR

CLEMENT J. ZABLOCKI VETERANS AFFAIRS MEDICAL CENTER PARKING STRUCTURE LOT 7 VA PROJECT 695-325 (A/E)

SITE:

CLEMENT J. ZABLOCKI VETERANS AFFAIRS MEDICAL CENTER
5000 WEST NATIONAL AVENUE
MILWAUKEE, WI 53295-0005



PREPARED BY:

PREPARED FOR:



www.thesigmagroup.com

1300 West Canal Street
Milwaukee, WI 53233
414-643-4200

UNITED STATES DEPARTMENT
OF VETERANS AFFAIRS



PROJECT REFERENCE #15233

NOVEMBER 2015

EXECUTIVE SUMMARY

The Clement J. Zablocki Veterans Affairs Medical Center (VAMC) intends to erect a four story parking structure to be located in an existing surface parking lots (Lots 7,8,9) to alleviate a shortage of parking for VAMC employees. The structure will replace a portion of existing 500 paved surface stalls, for a net result of 257 additional parking spacing on campus. The parking structure will incorporate storm water management features to control storm water runoff and improve water quality. Modifications to Warehouse Way, Lincoln Drive, West Washington Street and General Mitchell Boulevard will include improved traffic patterns for entering and exiting the parking lots and structure. Construction is anticipated to begin in June 2016 and be completed by June 2017.

This Environmental Assessment (EA) for construction and operation of the parking structure (Proposed Action) was prepared to meet the requirements of the National Environmental Policy Act (NEPA). The purpose of the EA is to report the environmental analysis of the Proposed Action in sufficient detail to allow the VAMC to determine whether it is necessary to prepare an Environmental Impact Statement (EIS) or to prepare a finding of no significant impact (FONSI) for the Proposed Action.

Analysis indicates the Proposed Action will result in minimal or no impacts to the following:

- Aesthetics and land use
- Air quality
- Cultural resources
- Geology and soils
- Hydrology and water quality
- Floodplains, wetlands and coastal zone management
- Wildlife and habitat
- Noise
- Public health and safety
- Solid and hazardous materials
- Utilities
- Socioeconomics
- Community services
- Environmental justice
- Cumulative impacts
- Potential for generating substantial controversy

The Proposed Action will have a moderate negative short-term effect on parking associated with construction activities. However, the construction of the surface parking stalls in the southeast portion of the campus will create additional parking for displaced patients, visitors and/or staff during the construction of the parking structure. The long-term effect on parking will be a substantial improvement.

Construction activity may create short-term impacts from temporary increases in noise, air pollutant emissions and traffic. Construction activities may also have the potential to cause short-term impacts on storm water run-off and temporary effects on visual quality. The mitigation measures described in this EA will be implemented to reduce potential adverse impacts from construction of the parking structure.

As a result of the analysis of impacts of the Proposed Action contained in this EA, it is the VAMC's conclusion that, with the incorporation of appropriate construction practices, compliance with regulatory requirements, and implementation of mitigative actions and best management practices as described in the EA, the Proposed Action will not have a significant environmental impact.

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Figure 2 – Location of Proposed Parking Structure within Existing Lots

Figure 3 – Design Layout for Proposed Parking Structure

Figure 4 – Wisconsin Wetland Inventory Map

Appendix

A – List of Environmental Permits Required

B – NHPA Section 106 Consultation-*No Adverse Effect*, May 12, 2015

C – Phase II Environmental Assessment, The Sigma Group, Inc. November 2015

1.0 INTRODUCTION

1.1 Project Background

The Clement J. Zablocki Veterans Affairs Medical Center (VAMC) is located on a 125-acre campus in Milwaukee, Wisconsin. The VAMC provides primary, secondary, and tertiary medical care in 168 acute care operating beds and provides over 500,000 visits annually through an extensive outpatient program. The VAMC is part of VA Integrated Services Network 12 (VISN 12), which includes facilities in Iron Mountain, Michigan, Tomah and Madison, Wisconsin, and North Chicago, Hines and Chicago, Illinois. The nursing home care unit of 113 beds offers geriatric programming and the 356 domiciliary beds are the locus of programs in Substance Abuse Rehabilitation, Psychiatric Rehabilitation and Post Traumatic Stress Disorder care. Special programs include interventional radiology, cardiac surgery, comprehensive cancer care including radiation therapy, an extensive telemedicine program with the Iron Mountain, Michigan VAMC, a Spinal Cord Injury Unit, and in long term care, a Geriatric Evaluation and Management Program and a palliative care program. The VAMC is the VA Great Lakes Health Care System's northern tier hub for both imaging, and pathology/laboratory medicine.¹

The area surrounding the VAMC's campus includes Interstate 94 to the north, State Trunk Highway 341 (Miller Park Way) to the east, State Trunk Highway 59 (National Avenue) to the south, and 56th Street to the west. The project site is located in the southeast portion of the campus near the northwest corner of General Mitchell Boulevard and National Avenue in the main parking lots that serve the VAMC (see Figure 1). Figure 2 shows the conceptual site plan of the parking structure within the existing VAMC parking lots.

The VAMC intends to construct a new parking structure just east of General Mitchell Boulevard with 402 spaces on four levels. Figure 3 shows the conceptual design of the parking structure and parking lot improvements. The parking structure will replace a portion of the existing paved surface stalls, for a net result of 257 additional parking spaces on campus. The parking structure will incorporate storm water management features to control storm water runoff and improve water quality. Modifications to General Mitchell Boulevard, West Washington Street, Lincoln Drive and Warehouse Way will include improved traffic patterns for entering and exiting the east parking lots and structure.

This Environmental Assessment (EA) for construction and operation of the parking structure (Proposed Action) was prepared in accordance with the regulations set forth by the Council on Environmental Quality implementing the provisions of the National Environmental Policy Act (NEPA) (CEQ Regulations, Title 40 CFR 1500-1508); Executive Order 11514 as amended by Executive Order 11991; and VA Regulations - Environmental Effects of VA Actions (Title 38 CFR Part 26). The purpose of the EA is to report the environmental analysis of the Proposed Action in sufficient detail to allow the Department of Veterans Affairs (VA) to determine whether it is necessary to prepare an Environmental Impact Statement (EIS), or to prepare a finding of no significant impact (FONSI) for the Proposed Action. The EA format follows the recommendations contained in the Department of Veterans Affairs *NEPA Interim Guidance for Projects*.

¹ <http://www.milwaukee.va.gov/about/index.asp>

1.2 Purpose and Need

The purpose of the Proposed Action is to provide additional parking for VAMC staff immediately in close proximity to the hospital where the services are provided. The need for the additional parking structure is that the existing parking at the VAMC is severely inadequate to meet patient demands. This campus serves both veterans with medical (VAMC) and benefit (VARO) needs. Currently, both the VAMC and VARO are experiencing parking shortages for patients, visitors and staff. At present, there are 3,367 parking stalls assigned to the VAMC, 193 parking stalls assigned to the VARO and between 150 and 200 temporary parking stalls. The total present need for additional parking stalls for the VAMC is 300 and 125 parking stalls for the VARO.²

The existing lack of adequate parking is a major element of patient and visitor dissatisfaction and is an area in which the VAMC receives consistent complaints. The lack of available parking causes many patients to arrive late or miss their scheduled appointments. In addition, the lack of parking results in traffic congestion as people wait for a space. Exhaust from the idling vehicles increase air pollutant concentrations at the VAMC campus. The construction of the Parking Structure and improvements to the surface lots designated to VAMC staff will free up other parking for patients and visitors.

2.0 PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.1 Development of Alternatives

Alternatives for the project were developed by the VAMC through implementation of the Agency's normal planning, budgeting and project implementation procedures and rules. Specific project goals and objectives were evaluated with respect to available facilities and spaces on the VAMC's campus.

The area where the parking structure is to be constructed is just east of Lincoln Drive and has functioned as a parking lot since 1967. The proposed parking structure will fit within the perimeter boundary of the existing surface lot (Lot 7). Three alternatives were developed for the necessary parking addition. These alternatives are presented below.

Alternative 1 is a **No Action** alternative and does not involve construction activities under this alternative. The existing parking lot remains in use without alteration. This alternative does not satisfy the purpose and need for the action, which is to provide adequate parking for staff to the VAMC and allow the VAMC to provide acceptable service. Nevertheless, the No Action Alternative is evaluated in this EA as required by NEPA.

Alternative 2 is a **shuttle service** between off-site parking and the VAMC campus. The area surrounding the VAMC is residential, commercial and industrial. The off-site parking spaces available for lease are not within walking distance of the VAMC campus and therefore, the VAMC employees would need to take city buses to the campus. Thus, the off-site parking space would need to be on or near the city bus route. The parking space would also need to be available without any restrictions on use. Key support hospital staff, such as on-call staff in the Operating Rooms, may have significant concerns with using the city bus system and meeting time-sensitive patient demands.

² Plunkett Raysich Architects Parking Study.

Alternative 3 is the proposed action, **construction of the proposed parking structure** in the southeast portion of the campus near the southwest corner of General Mitchell Boulevard and National Avenue. This area is currently surface parking stalls and serves as the VAMC's main parking area.

2.2 Alternatives Considered But Dismissed From Further Analysis

Alternative 2, shuttle service between off-site parking and the VAMC campus, was dismissed due to the lack of parking areas of sufficient size and availability.

2.3 Alternatives Retained For Detailed Analysis

The VAMC has determined that the proposed alternative is to construct the staff parking structure near the northwest corner of General Mitchell Boulevard and National Avenue (Alternative 3). All goals and objectives of the project would be accomplished under this alternative. Thus, Alternative 1 (no action) and Alternative 3 (proposed action) are the two alternatives retained for a detailed analysis.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS OF ALTERNATIVES

A summary of the environmental consequences of Alternative 1 (No action) and Alternative 3 (Proposed Action) is presented in Table 1.

Table 1. Summary of Environmental Consequences for Alternatives 1 and 3.

Affected Environment	Environmental Impacts	
	Alternative 1 (No Action)	Alternative 3 (Proposed Action)
Aesthetics and Land Use	No change from current conditions.	The parking structure has been designed to aesthetically fit in with existing campus buildings. The Proposed Action will not adversely alter land use or impervious site characteristics since the parking structure will be constructed within the same footprint as the existing parking lot.
Air Quality	No change from current conditions.	Potential for temporary localized air quality impacts during demolition and construction from site grading, vehicle emissions and construction equipment. Contractor traffic volumes are anticipated to increase in the surrounding area causing minor impacts to air quality. Mitigation measures will minimize blowing dust and using construction equipment with cleaner diesel fuel and/or pollution controls. Construction of the parking structure will alleviate traffic congestion and should improve local air quality.
Cultural Resources	No change from current conditions.	The parking structure will be located outside of the National Historic Landmark (NHL) boundary. However, it will still be within the viewshed of the NHL. The VAMC, Wisconsin State Historic Preservation Office, Advisory Council on Historic Preservation and National Park Service concur that the parking structure will have No Adverse Effect per NHPA Section 106 on historic properties within the project area of potential effect. (See Appendix B). Due to the existence of reworked soils within the project area, it is highly unlikely that archeological resources exist within the project site. If archeological resources are found during ground breaking stages of construction or during demolition, activity will be stopped and the Office of Historic Preservation at the Wisconsin Historical Society will be consulted to implement emergency archeological data recovery prior to continuation of work. Implementation of these mitigation measures will not result in significant impacts.

Affected Environment	Environmental Impacts	
	Alternative 1 (No Action)	Alternative 3 (Proposed Action)
Geology, Topography, and Soils	No change from current conditions.	Temporary disturbance to soils during demolition and construction. Erosion and sediment controls and storm water management will minimize erosion and offsite sediment delivery to receiving waters. The shallow reworked soil with non-soil inclusions and reported concentrations of contaminants will be managed appropriately through disposal at a landfill facility or a site accepting low-level impacted material through a NR 718.12 approval.
Hydrology and Water Quality	No change from current conditions.	Project construction may have minimal effects on the surface water quality; however, the effects will be temporary and no long term adverse effects are anticipated. There may be increased amounts of storm water runoff during construction; however, the increased runoff is not anticipated to have any major effects on surface waters near the project area. The Proposed Action will not adversely alter land use or impervious site characteristics. The parking structure will be constructed within the same footprint as the existing parking lot. Water from the top level of the new structure will be directed through rainfall leaders to landscaped areas. The effects on surface water quality are considered minimal.
Floodplains, Wetlands, and Coastal Zone Management	No change from current conditions.	The site of the parking structure is not situated within a designated floodplain. No wetlands or waters of the U.S. occur on the site that will be disturbed. Milwaukee County is a Coastal Zone Management Area. No effects to Coastal Zone waters are anticipated from the Proposed Action.
Wildlife and Habitat	No change from current conditions.	Because there is little or no habitat for wildlife and listed species, there will be no impacts to species or habitat.
Noise	No change from current conditions.	Noise generation during construction of the parking structure will be temporary and will not result in long term or cumulative noise impacts.
Public Health and Safety	No change from current conditions.	Release of potential hazardous materials associated with demolition and construction activities is not expected to occur. In the event that a release occurs, the site Health and Safety Plan and Emergency Response Plan will be followed in accordance to local, state, and federal rules.
Solid and Hazardous Materials	No change from current conditions.	Contractors will provide analytical test results or other suitable environmental documentation indicating any imported fill is free of hazardous materials before use at the site. In addition, contractors will be required to remove and properly dispose of solid wastes and hazardous materials brought on-site during construction. Impacts from solid wastes and hazardous materials are not anticipated to occur from the Proposed Action.
Transportation and Parking	No change from current conditions.	Construction activities are not anticipated to cause traffic congestion on the adjoining streets or interruption in public transportation routes. Access to the existing VAMC parking lot (Lot 4) will be restricted due to the construction of the parking structure. However, surface parking stalls being installed in the northeast corner of General Mitchell Boulevard and National Avenue will be used for displaced patients, visitors and/or staff during planned construction of the parking structure.

Affected Environment	Environmental Impacts	
	Alternative 1 (No Action)	Alternative 3 (Proposed Action)
Utilities	No change from current conditions.	The parking structure will not generate increases in storm water runoff that will exceed the capacity of the storm water system. The parking structure will replace existing parking, which is lit from centrally located light poles. Installation of new lighting on the floors of the new parking structure could be adequately served by the existing electrical service. Impacts on utilities are considered minimal.
Socioeconomics	No change from current conditions.	There will be no long-term impacts. Some short-term increases in construction jobs may be associated with construction and design activities of the parking structure.
Community Services	No change from current conditions.	There will be no change in the type of operations undertaken at the VAMC and no expansion of the public services provided. Therefore, there will be no impact on police protection, fire protection, parks or other community services.
Environmental Justice	No change from current conditions.	The construction of the parking structure will not have a disproportionately high and adverse human health or environmental effect on minority and low-income populations.
Cumulative Impacts	No change from current conditions.	The analysis considered cumulative impacts and determined they are minimal.
Potential for Generating Substantial Controversy	No change from current conditions.	The Proposed Action is not anticipated to generate substantial controversy.

The affected environment and potential environmental impacts at and adjacent to the VAMC for Alternative 1 (No Action) and Alternative 3 (Proposed Action) are described below.

3.1 Aesthetics and Land Use

The site for the parking structure is currently used as a surface parking lot (Lot 7) that serves the VAMC. This southeast corner of the campus is bordered by State Trunk Highway (STH)-341 (Miller Park Way) to the east and STH-59 (National Avenue) to the south. The project site is in an area currently utilized by a mix of industrial, residential and commercial activities. Primary activity in the area is attributed to the operations of the VAMC, Miller Park and industrial and commercial businesses along with residential housing.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The parking structure has been designed to aesthetically fit in with existing campus buildings. The construction of the parking structure will not adversely alter land use or impervious site characteristics since the parking structure will be constructed within the same footprint as the existing parking lot.

3.2 Air Quality

The Federal Clean Air Act requires the U.S. Environmental Protection Agency (USEPA) to regulate air pollutants from both mobile and stationary sources. The USEPA sets

limits on air pollutants considered harmful to public health and the environment through the National Ambient Air Quality Standards (NAAQS). The USEPA has set NAAQS for six “criteria” pollutants, including carbon monoxide, lead, nitrogen dioxide, ozone, particle pollution (particulates) and sulfur dioxide.

The Wisconsin Department of Natural Resources (WDNR) created air pollution control regulations (Wisconsin Administrative Code chapters NR 400 through 499) that reflect both federal and state rules. Currently, the VAMC has obtained an air operation permit from the WDNR for operation of boilers, emergency generators and ethylene oxide sterilizers. The air operation permit consists of operational limitations such that the air quality on the VAMC campus will meet state and federal limits.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Demolition of a portion of the existing parking lot and construction of the parking structure may result in a potential for temporary localized air quality impacts from site grading activities, vehicle emissions and construction equipment. However, a dust control plan will be implemented during the demolition and construction in order to minimize particle pollution impacts to air quality. Also, construction equipment that uses cleaner diesel fuel and/or pollution controls will be used in order to minimize air quality impacts. The construction activities for the parking structure would not require a WDNR air construction permit.

Increased contractor traffic volumes are anticipated in the proposed project area during the demolition of a portion of the existing parking lot and construction of the parking structure. However, it is anticipated that minimal impacts to air quality will occur due to the slight increase in traffic volumes on the VAMC campus. The addition of the parking structure would not require modification to the current air operation permit.

3.3 Cultural Resources

The National Home for Disabled Volunteer Soldiers (NHDVS) was established in 1865 as the first federal-level institution dedicated to the care of veteran soldiers. The Northwestern Branch in Milwaukee, Wisconsin, was one of the three original NHDVS branches. By the time the NHDVS was absorbed into the newly formed Veterans Administration in 1930, there were eleven branches across the country.

About 90 acres of the campus of the Northwestern Branch was designated as a National Historic Landmark in 2011, with a period of significance extending from 1866 to 1930. An area of approximately 150 acres was listed in the National Register of Historic Places in 2005, with a period of significance of 1867-1955. The National Historic Landmark/National Register districts are characterized by a collection of historic buildings exhibiting a range of styles, set on undulating grass lawns with irregular plantings of trees, bushes, and other vegetation. The campus has historically been traversed by a network of roadways and walkways. Although components of

this network have been modified over time, many retain their rambling character as they circumnavigate landscape elements. Natural and manmade water features enhance the campus. Character-defining features include the varied topography, lush vegetation, water features, spatial organization, circulation patterns, view sheds, buildings, structures, and objects. It should be noted that an archaeological survey of the site has not been conducted to date.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The site for the parking structure is located just east of Lincoln Drive and is currently used as a surface parking lot (Lot 7). Even though the parking structure will be located outside of the National Historic Landmark (NHL) boundary, it will still be within the viewshed of the NHL. The VAMC, Wisconsin State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation (ACHP) and National Park Service (NPS) concur that the parking structure will have No Adverse Effect in accordance with NHPA Section 106 on historic properties within the project area of potential effect. (see Appendix B)

Due to the existence of reworked soils within the project area, it is highly unlikely that archeological resources exist within the project area. If archeological resources are found during ground breaking stages of construction or during demolition, activity will be stopped and the Office of Historic Preservation at the Wisconsin Historical Society will be consulted to implement emergency archeological data recovery prior to continuation of work. Implementation of these mitigation measures will not result in significant impacts.

3.4 Geology and Soils

The Sigma Group, Inc. (Sigma) conducted a Phase II Environmental Site Assessment at the proposed parking structure site in April 2015 (see Appendix C for a copy of the report). As stated in the report, six soil borings were installed on April 27, 2015. The borings encountered reworked silty clay and clayey silt with few sandy silt layers with minor amounts of non-soil inclusions (e.g., wood, concrete, and brick pieces) to a maximum depth of approximately 20 feet below ground surface. Native grey clay was encountered within two soil boring. Gravelly sand base course was present beneath the current asphalt pavement. Wet soil conditions were observed at a depth of approximately 4.5 feet below ground surface within soil borings GP-2 and GP-5, which is assumed to be perched water; refusal was encountered prior to observation of saturated soil conditions at the other soil boring locations.

Laboratory analytical soil quality results from soil borings installed on April 27, 2015 showed concentrations of diesel range organics, petroleum volatile organic compounds, semi-volatile organic compounds (SVOCs) and/or RCRA metal constituents were reported above applicable WDNR soil quality standards for protection of the direct contact pathway (non-industrial land use setting) and/or protection of groundwater. Laboratory analysis of landfill disposal parameters

indicates that the soil collected from the five soils borings is characteristically non-hazardous and will need to be managed appropriately.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Demolition of a portion of the existing parking lot and construction of the parking structure will result in temporary disturbance to soils. Erosion and sediment controls and storm water management will minimize erosion and offsite sediment delivery to receiving waters. In addition, the shallow reworked soil with non-soil inclusions and reported concentrations of contaminants will be managed appropriately through disposal at a landfill facility or a site accepting low-level impacted material through a NR 718.12 (Management of Contaminated Soil) approval.

3.5 Hydrology and Water Quality

The WDNR developed the Wisconsin Pollutant Discharge Elimination System (WPDES) Storm Water Discharge Permit Program to meet the requirement of the Federal Clean Water Act. Chapter NR 216 (Storm Water Discharge Permits) of the Wisconsin Administrative Code (WAC) regulates the discharge of storm water from construction sites, industrial facilities and municipalities. This discharge permit program is designed to prevent contaminated storm water runoff from reaching local streams, rivers, lakes or coastal waters. In addition, Chapter NR 151 (Runoff Management) of the WAC pertains to storm water runoff and redevelopment which establishes water quality performance criteria for redevelopment projects.

The City of Milwaukee has been granted a WPDES storm water permit from the WDNR and administers its own storm water program under Chapter 120 (Storm Water Management Regulations) of the City of Milwaukee Ordinances. Chapter 120 establishes procedures to control the adverse impacts associated with storm water runoff.

The Milwaukee Metropolitan Sewerage District (MMSD) Chapter 13 (Surface Water and Storm Water) pertains to surface water and storm water control associated with redevelopment projects to protect water quality and quantity.

Storm water runoff in the main parking lots currently is directed to catch basins and flows to the MMSD.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Land disturbance during the construction project will expose bare soil which can erode during storm events. This could lead to a potential significant impact; however, the VAMC will apply for a Construction Site Erosion Control and Storm Water Discharge Permit as specified in NR 216 (Storm Water Discharge Permits) and develop and implement construction site erosion control and storm water management plans.

In addition, the VAMC has erosion control specifications that will be enforced during the project. Project construction may have minimal effects on the surface water quality; however, the effects will be temporary and no long term adverse effects are anticipated. There may be increased amounts of storm water runoff during construction; however, the increased runoff is not anticipated to have any major effects on surface waters near the project area.

NR 151 classifies the parking structure as a “redevelopment” requiring reduction of total suspended solids (TSS) be incorporated into the design and operation. A system of collection and treatment features will be installed on the project site to control storm water runoff. The increased storm water runoff is not anticipated to have any major effects on surface waters near the site as they will be designed and installed to meet the NR 151 and the MMSD Chapter 13 regulatory requirements.

3.6 Wetlands, Floodplains, and Coastal Zone Management

The excavating or placement of any material in low areas or wetlands requires a WDNR permit. The Wisconsin Wetland Inventory Map (see Figure 4) shows that there are no wetlands at the site of the proposed parking structure.

The Federal Emergency Management Agency (FEMA) prepares Flood Insurance Rate Maps (FIRMs) that depict the location of Special Flood Hazard Areas (SFHAs). A SFHA is defined as land area covered by the floodwaters of the base flood. The SFHA is the area where the National Flood Insurance Program’s floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies. These maps are the regulatory standard for municipal floodplain zoning ordinances.

In Wisconsin, floodplain development is managed through local floodplain ordinances. Municipalities are required by s. 87.30(1) of the State Statutes to adopt reasonable and effective floodplain zoning ordinances. NR 216 of the Wisconsin Administrative Code provides rules that a municipality must follow in the preparation and implementation of their floodplain zoning ordinances. The City of Milwaukee regulates uses within the floodplain through the Overlay Zones found in Section 295-1011 of the City of Milwaukee Zoning Code.

However, FEMA has not created a physical FIRM panel for northwest corner of State Trunk Highway 341 (Miller Park Way) and National Avenue. According to FEMA, Panel 55079C0088E was not printed because there are no SFHAs. Thus, Panel 55079C0088E is not referenced in Section 295-1011 of the City of Milwaukee Zoning Code because a physical FIRM panel has not been created.

In discussions with Kurt Sprangers, P.E., City of Milwaukee Environmental Engineering, the City of Milwaukee, Milwaukee County, and the MMSD are currently in the process of remapping the floodplains on the Menomonee River and its tributaries including Woods Creek. This remapping is being prepared by the Southeast Wisconsin Regional Planning Commission (SEWRPC).

The schedule for submitting these preliminary floodplain delineations to FEMA for review and approval is uncertain at this time. Preliminary delineations prepared by SEWRPC do not indicate floodways or floodplains at the site of the proposed parking structure.

The Wisconsin Coastal Management Program was established under the Federal Coastal Zone Management Act to protect and wisely use the natural and historic resources of Wisconsin's Great Lakes coasts. The boundaries of the coastal zone subject to the Wisconsin Coastal Management Program extend to the state boundary on the waterward side and, on the inland side, include the 15 counties with frontage on Lake Superior, Lake Michigan, or Green Bay. Thus, Milwaukee County is within the Coastal Zone Management Area.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The site of the parking structure is not located within a designated floodway or floodplain and does not contain wetlands. However, storm water management plans will be prepared in a manner that will protect nearby hydrology sources. No effects to Coastal Zone waters are anticipated from the construction of the parking structure.

3.7 Wildlife and Habitat

The site of the parking structure is currently surface parking stalls. There is no habitat for wildlife and listed threatened, endangered and sensitive species at the project site.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

It is anticipated that there will be no impact to the natural environment, endangered/threatened species, or their habitat.

3.8 Noise

The City of Milwaukee regulates noise as defined in subchapter 2 (Noise Control) of Chapter 80 (Nuisances). The City has designated time periods and acceptable levels of noise in noise rating (NR) numbers established by the International Standards Organization. The acceptable noise limits range from NR 55 – 65 during established day time hours and 45 – 60 during night hours where the NR number is dependent upon zoning district (80-64-1). However, construction sites are exempt (80-67-1) from the daytime criteria in section 80-64-1.

The southeast corner of the VAMC campus is relatively noisy due to traffic on the surrounding roadways. Temporary noise is anticipated during the construction of the parking structure, primarily from construction equipment during the hours of 7:00 am to 3:00 pm, Monday through Friday.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Noise generation during demolition of a portion of the existing parking lot and construction of the parking structure will be temporary and will not result in long term or cumulative noise impacts.

3.9 Public Health and Safety (Hazardous Materials Current Conditions)

The site for the parking structure is currently used as a surface parking lot (Lot 4) that serves the VAMC. Demolition of a portion of the existing parking lot and construction of the parking structure is not anticipated to generate any new hazardous materials.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Release of potential hazardous materials associated with demolition and construction activities is not expected to occur. In the event that a release occurs, the site Health and Safety Plan and Emergency Response Plan will be followed in accordance to local, state, and federal rules.

3.10 Solid and Hazardous Materials

The site for the parking structure is currently used as a surface parking lot (Lot 7) where removal of pavement and underlying soils will occur along with backfilling.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

If applicable, contractors will provide analytical test results or other suitable environmental documentation indicating any imported fill is free of hazardous materials before use at the site. Contractors will be required to remove and properly dispose of solid wastes and hazardous materials brought on-site during demolition and construction. Impacts from solid wastes and hazardous materials are not anticipated to occur from the construction of the parking structure.

3.11 Transportation and Parking

The VAMC currently provides on-site parking for patients, visitors and staff throughout its campus. In addition, the VAMC is a destination on one of the Milwaukee County Transit System's routes.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Demolition and construction activities are not anticipated to cause traffic congestion on the adjoining streets or interruption in public transportation routes. Access to the existing VAMC parking lot (Lot 7) will be restricted during the demolition of a portion of the existing parking lot and construction of the parking structure. However, surface parking stalls being installed in the northeast corner of General Mitchell Boulevard and National Avenue will be used for displaced patients, visitors and/or staff during construction of the parking structure.

Equipment and materials shall be stored in designated contractor on-site staging areas in such a manner to minimize obstruction of traffic. Locations shall be identified for parking by construction workers, either within the staging area or designated area. The VAMC or the contractor shall consult with local traffic and transit agencies and the Milwaukee Fire Department, and shall provide notification in advance of the timing, location, and duration of construction activities and the locations of needed detours and lane closures. Detours may be included for bicycles and pedestrians in all areas potentially affected by construction.

Traffic Analysis & Design, Inc. (TADI) conducted a traffic study for the proposed parking structure to determine the additional traffic expected to be generated from the parking structure and to identify roadway improvements necessary to accommodate the structure and reconfigured parking lots. The design of the parking structure incorporates the recommendations of the traffic study.

3.12 Utilities

The project location and surrounding area has all public utility services available (water, sanitary sewer, storm water drainage, police, fire and emergency medical services). Storm water is managed by the City of Milwaukee and Milwaukee Metropolitan Sewerage District (MMSD). Wastewater is managed by the MMSD. Excel Energies provides electrical power to the VAMC campus and natural gas is provided by WE Energies. Utility requirements of the VAMC are currently being met.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The parking addition will replace existing parking, which is lit from centrally located light poles. Installation of new lighting on the floors of the new parking structure could be adequately served by the existing electrical service.

3.13 Socioeconomics

Some short-term increases in construction jobs may be associated with construction and design activities of the parking structure. Construction of the parking structure

will not displace any schools, residential housing, or other commercial structures that could impact children less than 18 years of age.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

As a result of the proposed action, some localized and temporary beneficial economic impacts might be experienced by construction workers hired for the project. The increase in employment associated with the proposed action is not expected to impact minority and low-income populations. There are no anticipated long-term impacts.

3.14 Community Services

With the addition of the parking structure, there will be no change in the type of operations undertaken at the VAMC and no expansion of the public services provided.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

Since there will be no change in the type of operations undertaken at the VAMC and no expansion of the public services provided, it is anticipated that there will be no impact on police protection, fire protection, parks or other community services.

3.15 Environmental Justice

The 2010 Census data for the tracts surrounding the VAMC indicate that the Proposed Action will not result in disproportionate impacts to any minority or low-income portion of the community because the surrounding tracts are predominantly White and African American. The VAMC is located within Census Tract 186800 for the City of Milwaukee. According to the 2010 census data for this tract, White and African American races comprise over 57 percent of the population.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The Proposed Action will not have a disproportionately high and adverse human health or environmental effect on minority and low-income populations.

3.16 Cumulative Impacts

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The analysis considered cumulative impacts and determined they are minimal.

3.17 Potential for Generating Substantial Controversy

Construction of a parking structure just east of Lincoln Drive is not anticipated to generate substantial controversy. The parking structure has been designed to aesthetically fit in with existing campus buildings.

Alternative 1 – No Action Alternative

No change from current conditions.

Alternative 3 – Construct parking structure (Proposed Action)

The Proposed Action is not anticipated to generate substantial controversy.

4.0 MITIGATION SUMMARY

Air Quality

A dust control plan will be developed and implemented during the construction to minimize particle pollution impacts to air quality. Also, construction equipment that uses cleaner diesel fuel and/or pollution controls will be used in order to minimize air quality impacts.

Cultural

If archeological resources are found during ground breaking stages of construction or during demolition, construction activity will be stopped in that locality and the Office of Historic Preservation at the Wisconsin Historical Society will be consulted to implement emergency archeological data recovery prior to continuation of work. If any archeological materials are encountered during demolition, work will be stopped and the Office of Historic Preservation at the Wisconsin Historical Society will be consulted prior to continuing work. If an emergency archeological data recovery is required, the construction contractor shall erect exclusion fencing to prevent the public from accessing areas immediately adjacent to or within the construction zone.

Geology and Soils

The VAMC engaged the services of a qualified firm to perform a Phase II Environmental Site Assessment. Environmental subsurface investigation activities revealed shallow reworked soil with non-soil inclusions and reported contaminants in the area of the site of the parking structure. This soil will be managed appropriately through disposal at a landfill facility or a site accepting low-level impacted material through a NR 718.12 (Management of Contaminated Soil) approval.

Water Quality

Prior to the start of construction, the VAMC will comply with the requirements of the WDNR and City of Milwaukee to obtain a Wisconsin Pollution Discharge Elimination System (WPDES) Construction Site Erosion Control and Storm Water Discharge Permit. This permit requires the development and implementation of an erosion control and storm water management plans. In addition, a system to control and treat storm water runoff will be located on the project site during operation of the parking structure.

Solid and Hazardous Materials

A site Health and Safety Plan and Emergency Response Plan will be developed, implemented and followed in accordance to local, state, federal, and Veterans Affairs rules in the event that a release of a potential hazardous material occurs.

Transportation and Parking

Equipment and materials shall be stored in designated contractor on-site staging areas in such a manner to minimize obstruction of traffic. Locations shall be identified for parking by construction workers, either within the staging area or designated area. The VAMC or the contractor shall consult with local traffic and transit agencies and the Milwaukee Fire Department, and shall provide notification in advance of the timing, location, and duration of construction activities and the locations of needed detours and lane closures. Detours may be included for bicycles and pedestrians in all areas potentially affected by construction. In addition, surface parking stalls being installed in the northeast corner of General Mitchell Boulevard and National Avenue will be used for displaced patients, visitors and/or staff during construction of the parking structure.

5.0 CONCLUSIONS

Based on the analysis of the impacts of the Proposed Action contained in this EA, it is the VAMC's conclusion that, with appropriate construction practices, compliance with regulatory requirements, and implementation of the mitigative measures contained in this EA that the Proposed Action will not have a significant environmental impact. The analysis in this EA indicates that there will be minimal or no impacts to the following:

- Aesthetics and land use
- Air quality
- Cultural resources
- Geology and soils
- Hydrology and water quality
- Floodplains, wetlands and coastal zone management
- Wildlife and habitat
- Noise
- Public health and safety
- Solid and hazardous materials
- Utilities
- Socioeconomics
- Community services
- Environmental justice
- Cumulative impacts
- Potential for generating substantial controversy

The Proposed Action will have a moderate negative short-term effect on parking associated with construction activities. However, the construction of the surface parking stalls in the southeast portion of the campus will create additional parking for displaced patients, visitors and/or staff during the construction of the parking structure. The long-term effect on parking will be a substantial improvement.

Construction activity may create short-term impacts from temporary increases in noise, air pollutant emissions and traffic. Construction activities may also have the potential to cause short-term impacts on storm water run-off and temporary effects on visual quality. The mitigation measures described in this EA will be implemented to reduce potential adverse impacts from construction of the parking structure.

6.0 LIST OF PREPARERS

Robert Peschel, P.E. – The Sigma Group, Inc.
Nicole Braun – The Sigma Group, Inc.

7.0 PUBLIC COMMENT AND RESPONSES

The Proposed Action will be publicized during a thirty day public comment period in The Milwaukee Journal, a local newspaper. If no substantive comments are received, the Draft EA will become final and this initial Public Notice will also serve as the final published Public Notice. Substantive comments will be addressed as appropriate in the final documents.

Public Comment Publication Dates: To Be Determined

8.0 AGENCIES CONSULTED, DATA RESOURCES

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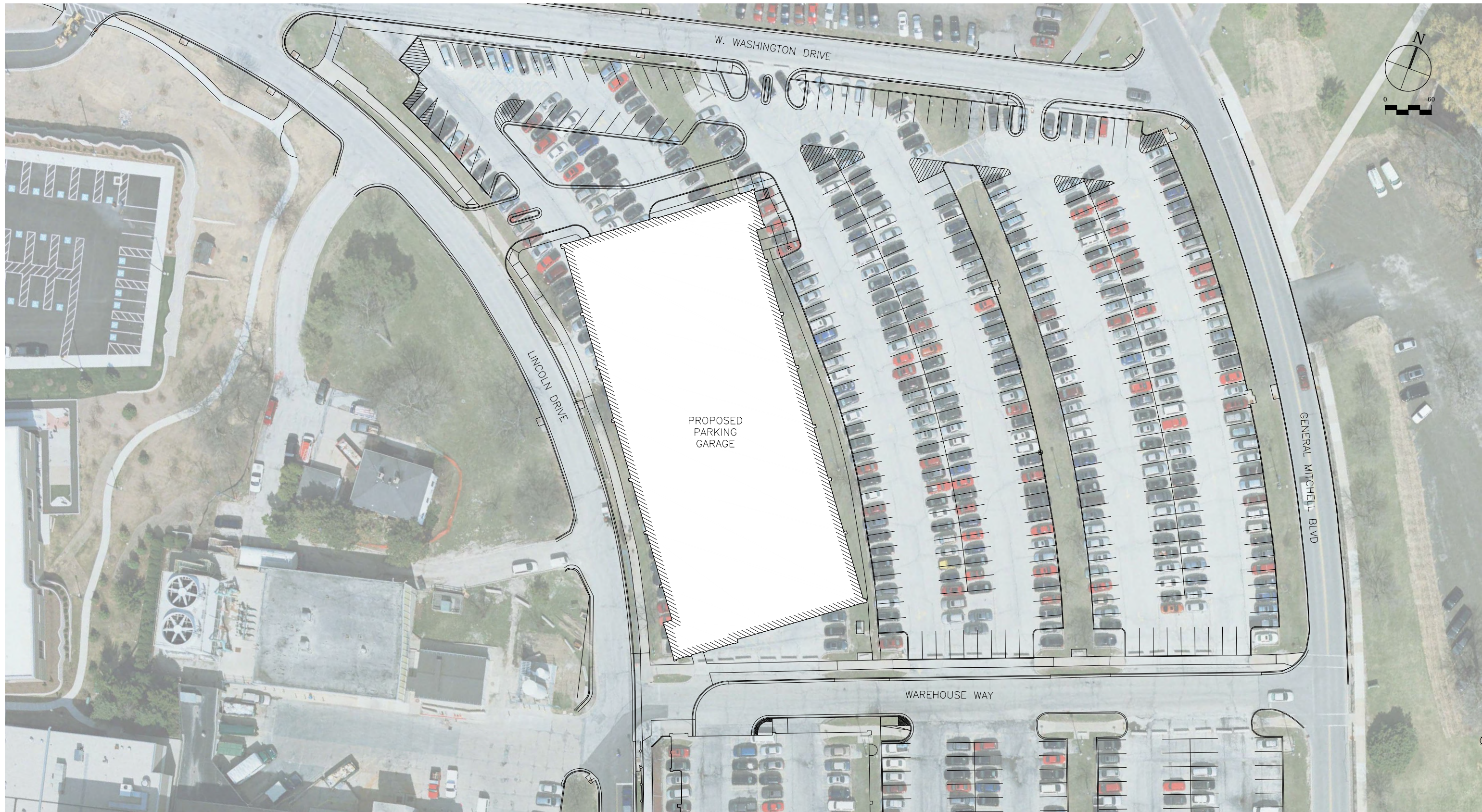
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- Figure 3 – Design Layout for Proposed Parking Structure
- Figure 4 – Wisconsin Wetland Inventory Map



Parking Structure Lot 7 - Proposed Site Plan



Clement J. Zablocki VA Medical Center

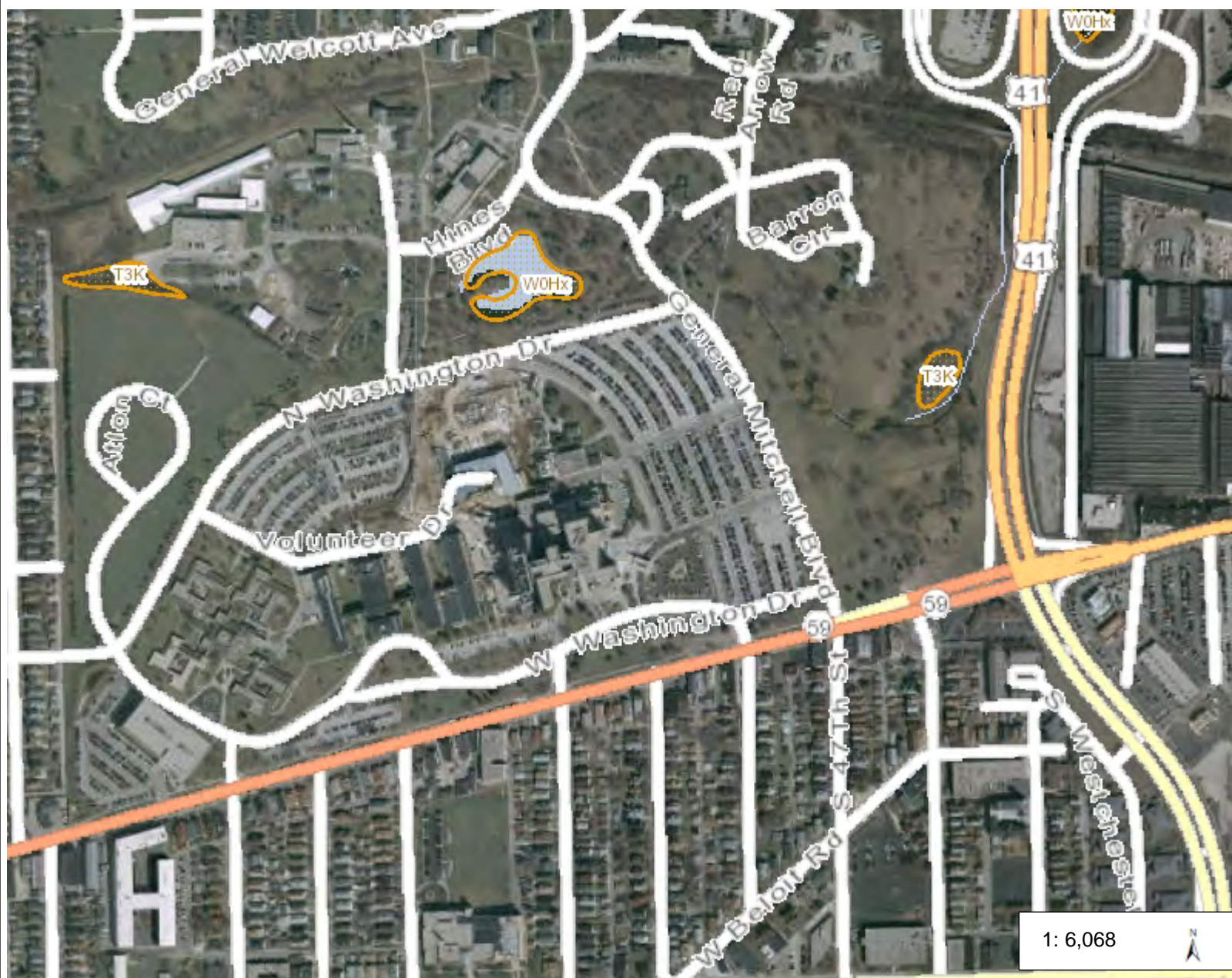
11/11/2015

5000 W. National Ave.
Milwaukee, WI 53295





Figure 4 - Wisconsin Wetland Inventory Map



Legend

Wetland Class Points

- Dammed pond
- Excavated pond
- Filled excavated pond
- Filled/draind wetland
- Wetland too small to delineate

Filled Points

Wetland Class Areas

- Wetland
- Upland
- Filled Areas
- Rivers and Streams
- Open Water
- 2010 Air Photos (WROC)

1: 6,068



0.2 0 0.10 0.2 Miles

NAD_1983_HARN_Wisconsin_TM
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Notes

APPENDIX A

LIST OF ENVIRONMENTAL PERMITS REQUIRED

An evaluation of the permits potentially needed for construction of the parking structure is outlined below.

Air: The construction of the parking structure at the VAMC is exempt from air permitting requirements. The VAMC currently operates under Wisconsin air operation permit #241031120-F20 as a synthetic minor. This permit allows the operation of boilers, emergency generators and ethylene oxide sterilizers.

Wastewater: The parking structure will not generate wastewater. Therefore, there will be no impact on the VAMC's wastewater discharge permit with the Milwaukee Metropolitan Sewerage District (MMSD). A Notice of Intent to the Milwaukee Metropolitan Sewerage District is not required.

Storm Water/Erosion Control: The WDNR requires landowners to install practices to help decrease the amount of sediment that pollutes Wisconsin's waterways from construction projects. Land disturbance during a construction project exposes bare soil which can erode during storm events. Practices help decrease the amount of sediment that runs off during a storm event. Erosion control plans contain specific practices to reduce erosion, divert storm water from disturbed or exposed construction site areas, and trap and control the transport of sediment and other pollutants. Construction site permits contain requirements for controlling erosion and storm water during construction as well as managing storm water runoff after construction is completed.

The VAMC will need to apply for and abide by a Construction Site Erosion Control and Storm Water Discharge Permit as specified in NR 216, Storm Water Discharge Permits (NR 216.41 through 216.55). To obtain a Construction Site Erosion Control and Storm Water Discharge Permit, the VAMC will need to:

Develop Erosion Control and Storm Water Management Plans describing the best management practices that will be used to control erosion and sediment and manage storm water.

1. Submit a Construction Site Notice of Intent form to the WDNR at least 14 working days before land disturbing construction activities begin.
2. Submit the applicable fee.
3. Implement best management practices, as described in the Erosion Control and Storm Water Management Plans.
4. Conduct on-site inspections at least once every seven days and within 24 hours after a rainfall event of 0.5 inch or more through the duration of the project.
5. Submit a complete Notice of Termination to the WDNR after the construction site has undergone final stabilization.

Following construction, a storm water discharge permit will not be required. NR 216.21, Applicability and exclusions, lists facilities by SIC code that require a storm water discharge permit. The VAMC does not require a Storm Water Permit because as a hospital it has a SIC code of 8062 which is not listed in NR 216.21.

In addition, the City of Milwaukee has a "Storm Water Management Regulations" Ordinance (Chapter 120) and an "Erosion Control" Ordinance (Chapter 290). The Storm Water Management Regulations establish procedures to control the adverse impacts associated with storm water runoff. The Erosion Control Ordinance applies to construction grading and excavation in or adjacent to any public way, watercourse, or storm water drainage facility.

Historic Structures and Archeology (National Historical Preservation Act): To remove artifacts or otherwise disturb archaeological sites requires a permit under The Field Archaeology Act Section 44.47 Wisconsin Statutes. It should be noted that an archaeological survey of the site has not been conducted to date.

Soils: The Spill Law, Chapter 292.11, Wis. Stats., requires that a person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance shall notify the WDNR of any discharge not exempted by the statute. Soil contamination that is discovered via sampling should be reported to the WDNR using Form 4400-225 (Notification for Hazardous Substance Discharge (Non-Emergency Only)).

Underground and Above Ground Storage Tanks (UST and AST): The VAMC and Wisconsin Department of Safety and Professional Services have no record of any USTs in the area where the parking structure will be constructed. In addition, no ASTs exist in the area. Therefore, there are no UST or AST permit requirements.

Coastal Zone Management Area: In Wisconsin, the 15 counties adjacent to Lake Michigan and Superior are designated Coastal Zone Management Areas. The VAMC is located within the Coastal Zone Management Area. No effects to Coastal Zone waters are anticipated from the construction of the parking structure.

Solid and Hazardous Wastes: No permit is required for disposal of solid wastes generated during demolition and construction as they will either be recycled (asphalt) or land filled. Contractors will be required to remove and properly dispose of solid wastes and hazardous materials brought on-site during construction. Therefore, there should be no permits required for any solid or hazardous waste generated during demolition of a portion of the existing parking lot and construction of the parking structure.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): The site of the parking structure is not designated as a Superfund site; therefore, the CERCLA Act does not apply to the project site.

Emergency Planning and Right to Know Act (EPCRA), Section 312: The VAMC completes and submits an annual Wisconsin Tier Two Emergency and Hazardous Chemical Inventory Report. No hazardous chemicals will be involved with the construction or operation of the parking structure. Therefore, no additional hazardous chemicals will need to be added to the annual Tier Two Emergency and Hazardous Chemical Inventory Report.

Noise Control Act: The City of Milwaukee regulates noise as defined in subchapter 2 (Noise Control) of Chapter 80 (Nuisances). The City has designated time periods and acceptable levels of noise in noise rating (NR) numbers established by the International Standards Organization. However, construction sites are exempt (Chapter 80-67-1) from the daytime criteria in Chapter 80-64-1. Therefore, there should be no permits required for noise generated during demolition of a portion of the existing parking lot and construction of the parking structure.

Spill Prevention, Control and Countermeasure (SPCC) Plan: The VAMC has developed and implemented a SPCC Plan. No new oil storage locations will be added to the campus as a result of the parking structure. Therefore, the SPCC Plan will not need to be revised.

APPENDIX B

National Historic Preservation Act (NHPA) Section 106 Consultation
No Adverse Effect, May, 12, 1015

NHPA Section 106 Consultation – No Adverse Effect

Northwestern Branch of the National Home for Disabled Volunteer Soldiers NHL in Milwaukee, Wisconsin

Project Name: Parking Structure II (Parking Lot 7 & 8)

Affected Property: The view shed from and of the Soldiers Home National Historic Landmark

Project number: VA /SHPO SHPO # 15-0478/MI

Consultation initiated by: Robert H. Beller, Director, Clement J. Zablocki Veterans Affairs Medical Center (VAMC), Veterans Integrated Service Network 12, 5000 West National Ave., Milwaukee, WI 53295

VA Contact: Matt Cryer, Clement J. Zablocki VAMC / (414)384-2000 x45716 / matthew.cryer@va.gov

A/E Team: Clement J. Zablocki VAMC Facility Management and Chequamegon Bay Group, Inc.

Consultation initiated on: October 25, 2014

Photographs of Affected Property:



*Clement J. Zablocki VAMC(111) on the right side and Old Main(2) in the distance. General Mitchell Blvd and National Ave (facing north)
(Photograph by Chequamegon Bay Group, Inc.)*



Clement J. Zablocki VAMC(111)



General Mitchell Blvd and National Ave (facing north)



Old Admin Building(1) and Old Main(2)



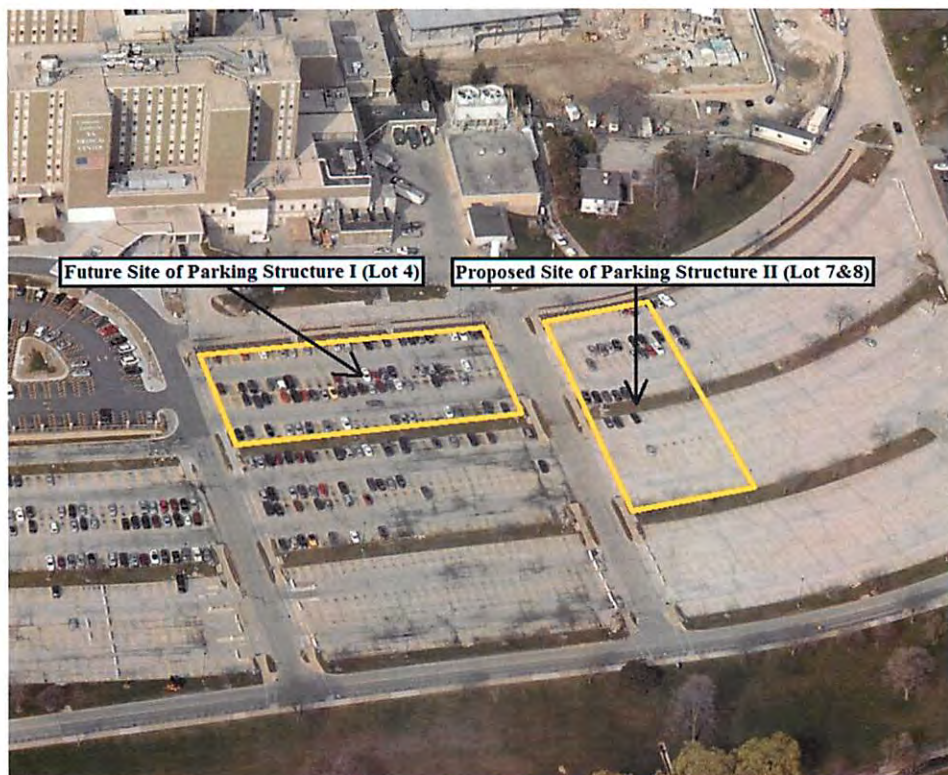
Clement J. Zablocki VAMC(111) at General Mitchell and Hines Blvd)



Clement J. Zablocki VAMC(111) from Community Living Centers

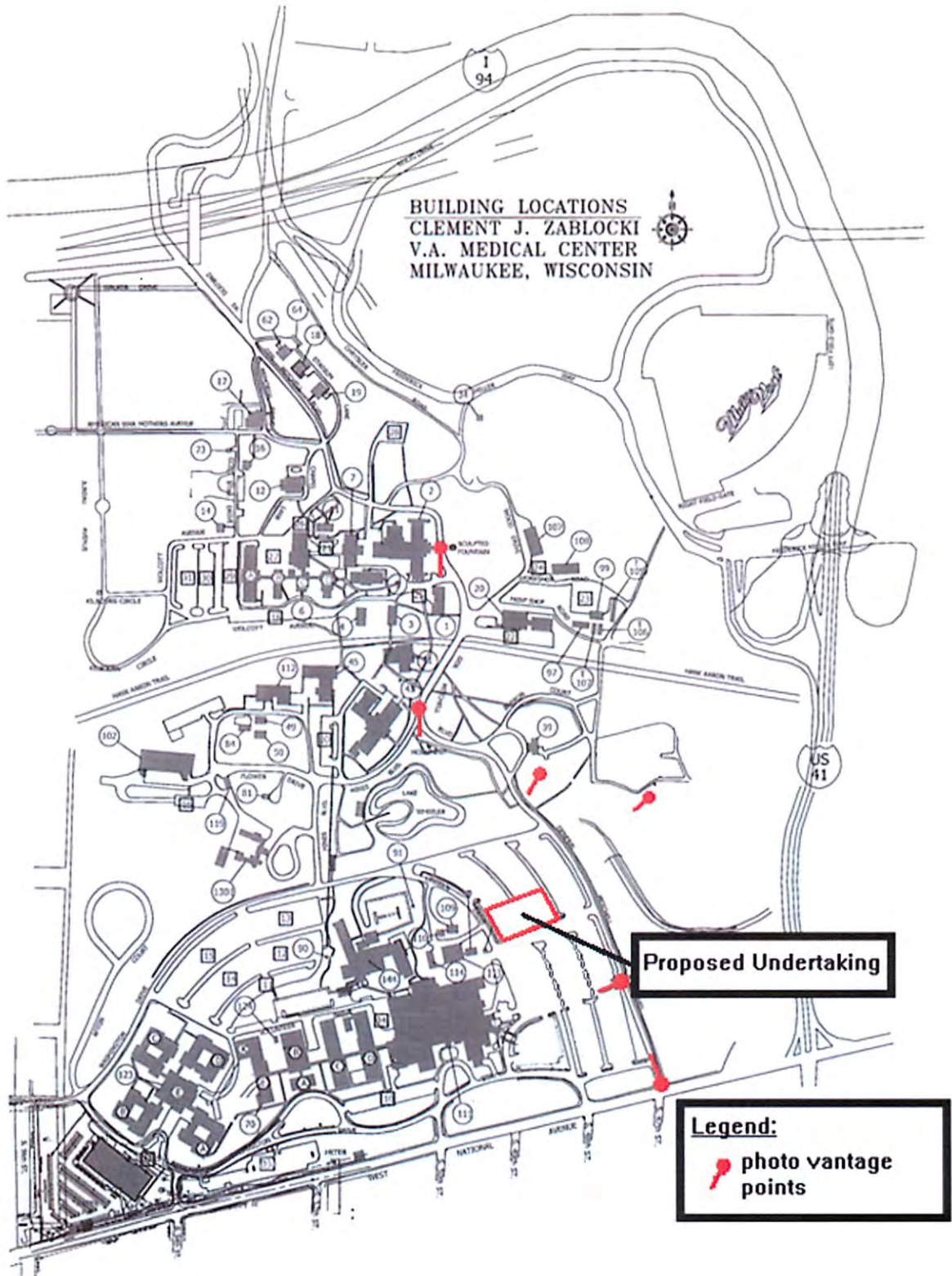


Clement J. Zablocki VAMC(111) from Governor's Mansion(39)



(Aerial Photograph – provided by bing.com/maps)

Location of Affected Property and Area of Potential Effects:



Historical Information on Affected Property:

The National Asylum (later Home) for Disabled Volunteer Soldiers was established in 1865 as the first federal-level institution dedicated to the care of veteran soldiers. The Northwestern Branch in Milwaukee, Wisconsin, was one of three original National Homes. The buildings and grounds of each branch represented the Board of Managers' policies and practices regarding veterans' care. Their campuses featured significant architecture and landscape designs intended to instill pride in veteran residents as well as the cities who hosted each facility. The grounds of the Northwestern Branch were planned in 1867 by landscape designer Thomas Budd van Horne. Avenues were laid out with respect to the undulating topography of the campus, consistent with the ideology of the picturesque landscape movement, which was popular throughout the late nineteenth century. Many landscapes of this era were conceived along the lines of sequential vistas. As evident in this ca. 1870 bird's-eye view, winding roadways encircled natural features and ornamental architectural elements to create scenic views. The original Home facility was designed by Milwaukee's most prominent architect, Edward Townsend Mix. As part of Van Horne's plan, it was situated atop a hill to provide commanding views throughout the campus. In addition to groves of trees and lush vegetation, land was set aside for agricultural purposes. This illustration shows the farm stretching along the eastern boundary. Orchards are in the center and bottom right corners with open fields along the rolling hills. Today, the campus retains many of its picturesque qualities.

The original site of the Northwestern Branch contained approximately 400 acres. Over the course of the twentieth century, the VA disposed of excess land it no longer needed. By 1957, the VA had transferred approximately 125 acres in the northeast corner of the site to the county and city for the purpose of building the Milwaukee County Baseball Stadium as well as an east-west expressway. The VA then transferred approximately 16 acres of land in the northern portion to the county in 1969. An easement covering approximately 7 acres of land in the southeastern corner of the campus was granted to the State of Wisconsin in 1971 for the expansion of 44th Street, which eventually became Highway 41. Between 1974 and 1985, nearly 46 acres of land occupied by the cemetery along the western boundary were conveyed to the National Cemetery Administration, which maintains jurisdiction of Wood National Cemetery to this day. The property boundaries changed as the VA disposed of excess land.

(REF: HALS No 13 and HALS No 13 Land Transfer Map)

Summary of Project:

This undertaking would construct a three tier parking structure east of the Clement J. Zablocki VA Medical Center(bldg. 111) and south of the parking structure planned within Parking Lot 4. It would be capable of accommodating up to 400 vehicles. The structure would not exceed a height of three tiers or 50 feet above surface.

The assigned Project Manager from the Milwaukee VAMC will provide copies of all phases of the design plans to the WI-SHPO, NPS and ACHP. The design plans will be made available to concurring parties on a web based data/file sharing site.

Proposed Finding:

It is held that this undertaking will have *no adverse effect(s)* on historic properties located within the Soldiers Home NHL District.

RECEIVED
MAY 08 2015

HP-05-07 (8/15/03)

For SHPO Use Only. Case # 15-0478/m1

BY: _____

REQUEST FOR SHPO COMMENT AND CONSULTATION ON A FEDERAL UNDERTAKING

Submit one copy with each undertaking for which our comment is requested. Please print or type. Return to:

Wisconsin Historical Society, Division of Historic Preservation, Office of Preservation Planning, 816 State Street, Madison, WI 53706

Please Check All Boxes and Include All of the Following Information, as Applicable:

I. GENERAL INFORMATION

- ☒ This is a new submittal.
☐ This is supplemental information relating to Case #: _____ and title: _____
☐ This project is being undertaken pursuant to the terms and conditions of a programmatic or other interagency agreement.
The title of the agreement is _____

- a. Federal Agency Jurisdiction (Agency providing funds, assistance, license, permit): _____
b. Federal Agency Contact Person: Matthew A. Cryer, Program Manager Phone: 414-384-2000 x45716
c. Project Contact Person: Matthew A. Cryer, Program Manager Phone: 414-384-2000 x45716
d. Return Address: 5000 W. National Ave Milwaukee, WI Zip Code: 53295
e. Email Address: matthew.cryer@va.gov
f. Project Name: Vertical Parking Structure (Parking Lot 7)
g. Project Street Address: National home for Disabled Volunteer Soldiers, Northwestern Branch, NHL
h. County: Milwaukee City: Milwaukee Zip Code: 53295
i. Project Location: Township _____, Range _____, E/W (circle one), Section _____, Quarter Sections _____
j. Project Narrative Description—Attach Information as Necessary.
k. Area of Potential Effect (APE). Attach Copy of U.S.G.S. 7.5 Minute Topographic Quadrangle Showing APE.

II. IDENTIFICATION OF HISTORIC PROPERTIES

- ☒ Historic Properties are located within the project APE per 36 CFR 800.4. Attach supporting materials.
☒ Historic Properties are not located within the project APE per 36 CFR 800.4. Attach supporting materials.

III. FINDINGS

- ☒ No historic properties will be affected (i.e., none is present or there are historic properties present but the project will have no effect upon them). Attach necessary documentation, as described at 36 CFR 800.11.
☒ The proposed undertaking will have no adverse effect on one or more historic properties located within the project APE under 36 CFR 800.5. Attach necessary documentation, as described at 36 CFR 800.11.
☐ The proposed undertaking will result in an adverse effect to one or more historic properties and the applicant, or other federally authorized representative, will consult with the SHPO and other consulting parties to resolve the adverse effect per 36 CFR 800.6. Attach necessary documentation, as described at 36 CFR 800.11, with a proposed plan to resolve adverse effect(s).

Authorized Signature: Robert H. Beller Date: April 28, 2015
Type or print name: Robert H. Beller, FACHE, Medical Center Director

IV. STATE HISTORIC PRESERVATION OFFICE COMMENTS

- ☒ Agree with the finding in section III above.
☐ Object to the finding for reasons indicated in attached letter.
☐ Cannot review until information is sent as follows.

Authorized Signature: [Signature] Date: 5/19/15

As ID and "Findings" modified above.

Signatory Review: National Park Service

National Home for Disabled Volunteer Soldiers Home National Historic Landmark
Milwaukee, Wisconsin

Project Name: Parking Structure II (Parking Lot 7 & 8)

Affected Property: The view shed from and of the Soldiers Home National Historic Landmark

Consultation initiated on: October 25, 2014

Proposed Finding

The project will have No Adverse Effect on historic properties.

In accordance with 36 CFR Part 800.5, the National Park Service:

- ☒ Concur with Finding
- ☐ Does Not Object to Finding
- ☐ Insufficient Information to Reply (submit within 30 days of receipt)
- ☐ Does Not Concur with Finding: Specify reasons for disagreement

*I recommend signature on the
finding of no adverse effect
for this project.*
Theresa June 5/12/15

- ☐ Requests Pre-construction On-site Meeting

By: *Paul T. M...* Date: 5-19-15

Cryer, Matthew A.

From: Chris Daniel <cdaniel@achp.gov>
Sent: Thursday, May 21, 2015 8:28 AM
To: Cryer, Matthew A.
Cc: Chip Brown; Diana Penkiunas; Curran, Michele
Subject: RE: [EXTERNAL] No Adverse Effect for Parking Lot 7

Matt,

As Brian used to say when provide with the NAEs, if SHPO concurs, then the ACHP has no objection.

Regards,

Christopher Daniel
Veterans Affairs Liaison
(202) 517-0223

From: Cryer, Matthew A. [<mailto:Matthew.Cryer@va.gov>]
Sent: Tuesday, May 19, 2015 5:50 PM
To: Curran, Michele
Cc: Chip Brown; Chris Daniel; Diana Penkiunas
Subject: RE: [EXTERNAL] No Adverse Effect for Parking Lot 7

Thanks Michele, I do appreciate the quick turn around on that.

v/r

Matt

From: Curran, Michele [mailto:michele_curran@nps.gov]
Sent: Tuesday, May 19, 2015 3:18 PM
To: Cryer, Matthew A.
Subject: [EXTERNAL] No Adverse Effect

See attached.

***Michele J. Curran, Ph.D. / Historian
National Historic Landmarks Program
National Park Service / Midwest Regional Office
601 Riverfront Drive / Omaha, Nebraska 68102***

***Phone: 402.661.1954 / Fax: 402.661.1955
Email: michele_curran@nps.gov***

APPENDIX C

Phase II Environmental Assessment, The Sigma Group, Inc. November 2015

November 12, 2015

Project Reference #15233

Mr. Kyle Cyr, PE, Env SP
Guidon Design
905 N. Capitol Avenue, Suite 100
Indianapolis, IN 46204

**Re: Phase II Environmental Site Assessment
Parking Structure Lot 7 at VAMC Milwaukee, Wisconsin
VA Project No: 695-325**

Dear Mr. Cyr:

The Sigma Group, Inc. (Sigma) has prepared this report to document and discuss the Phase II Environmental Assessment activities completed at the Clement J. Zablocki VA Medical Center within Parking Lot 7 located at 5000 W. National Avenue, Milwaukee, Wisconsin (hereinafter the "site"). The Phase II activities presented below were conducted in accordance with Sigma's January 9, 2015 proposal to team with Guidon Design in completing the VA's Scope of Work-A/E Services dated December 3, 2014.

BACKGROUND

Subsurface soil quality in the area of the proposed parking structure, current Lot 7 (**Figure 1**), was unknown and thought to possibly contain hazardous substances from historic undocumented fill. The following environmental subsurface investigation activities were conducted to assess if historical soil placement and/or land usage negatively impacted the property in the area of the proposed parking structure.

SITE INVESTIGATION ACTIVITIES

Site Description. The Clement J. Zablocki VA Medical Center (VAMC) is located on 125 acres on the western edge of Milwaukee. The facility is used to deliver primary, secondary, and tertiary medical care.

Utility Clearance. Sigma contacted Digger's Hotline on April 17, 2015 to locate public utility lines at and around Parking Lot 7 of the VAMC. All Lines Utility Services, LLC was contracted to mark private utility lines on April 22, 2015 prior to drilling activities.

Drilling Activities. On April 27, 2015, Sigma oversaw the installation of six direct-push (Geoprobe®) soil borings (GP-1 through GP-6) at the locations depicted in **Figure 2**. Soil borings were proposed to be installed to a completion depth of 20 feet below ground surface (bgs); however, refusal was met between 8 and 15 feet bgs at four of the boring locations. Soil borings were completed with a truck-mounted Geoprobe® hydraulic drill rig. Soil samples were continuously collected at each soil boring location with a 2.5-inch diameter by 4-foot long Macro-Core® sampler and described on the basis of color, texture, grain size, and plasticity, and were classified in general accordance with the Unified Soil

Classification System. A split portion of each soil sample was also screened with a calibrated organic vapor monitor (OVM) to measure for the presence of volatile organic vapors. Soil classifications, descriptions, specific sampling intervals, and OVM readings are presented on the soil boring logs in **Attachment A**.

One composite soil sample from each soil boring was collected and submitted for laboratory analysis of gasoline range organics (GRO), diesel range organics (DRO), petroleum volatile organic compounds (PVOCs), semi-volatile organic compounds (SVOCs), RCRA metals, and polychlorinated biphenyls (PCBs). Representative quantities of soil were placed in the laboratory-supplied containers for analysis. A completed chain of custody document accompanied the soil samples until received by the laboratory.

Upon completion, Geoprobe® boreholes GP-1 through GP-6 were abandoned with bentonite chips in accordance with NR 141 regulations from the bottom of the borehole up to four inches bgs. Each borehole location was capped with asphalt to restore the existing grade. Soil borehole abandonment forms are included in **Attachment B**.

Survey. Following completion of the environmental soil borings installed by Sigma (identified as GP-1 through GP-6) and geotechnical soil borings overseen by Terracon (labeled as B-1 through B-8), Sigma conducted survey activities to document the boring locations and marked utilities at the site as shown in **Figure 2**.

Drill Cuttings Disposal. Soil cuttings were placed in 55-gallon steel drums during site drilling activities and stored within Parking Lot 7 until the conclusion of drilling activities. In total, 8 drums were produced and removed from the site for disposal by Jensen Environmental Management, Inc. on May 12, 2015.

SITE INVESTIGATION RESULTS

Geology and Groundwater. Based on information obtained during the installation of environmental soil borings, the geology beneath the site generally consists of reworked silty clay and silty sand with few sand layers to a maximum depth of approximately 15 feet bgs. Native grey clay was encountered in soil borings GP-2 and GP-5 to the maximum depth investigated, 20 feet bgs. Gravelly sand base course was present beneath the asphalt pavement. Wet soil conditions were observed at a depth of approximately 4.5 feet bgs within soil borings GP-2 and GP-5, which is assumed to be perched water; refusal was encountered prior to observation of saturated soil conditions at the other soil boring locations. Specific soil characteristics and depths encountered during drilling activities are shown on the soil boring logs in **Attachment A**.

Soil Quality Results. Laboratory analytical soil quality results from borings GP-1 through GP-6 indicate that the analyzed compounds were reported below the laboratory detection limits, with the following exceptions:

- GRO/ DRO/ PVOCs
 - One or more PVOCs were identified in the soil samples collected from soil borings GP-3, GP-5, and GP-6; however, only one concentration of benzene within GP-3 was reported above applicable Wisconsin Department of Natural

Resources (WDNR) soil quality standards for protection of groundwater. Detectable concentrations of DRO were reported within soil samples collected from GP-1 and GP-3; however, the laboratory noted that oil contamination was indicated outside the DRO window in each of these samples.

- SVOCs
 - One or more SVOC constituents were identified in soil samples from soil borings GP-1 through GP-6. The concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were reported above applicable WDNR soil quality standards for protection of the direct contact pathway (non-industrial land use setting) and/or protection of groundwater. Other SVOCs were also detected but below applicable soil quality standards.
- RCRA Metals
 - RCRA metals concentrations were reported below WDNR soil quality standards with the exception of arsenic and lead within soil borings GP-2, GP-3, and GP-5. However, the detected concentrations of arsenic are below 8 mg/kg, which was established¹ as the statewide soil-arsenic background threshold value. The lead concentrations reported within soil borings GP-3 and GP-5 are above the WDNR soil quality standard for the protection of groundwater but below the standard for protection of the direct contact pathway.
- PCBs
 - All PCB Aroclors were reported below the laboratory limits of detection.

Soil quality data, and further descriptions of WDNR soil standards, are summarized in **Table 1**. The soil laboratory analytical reports are included as **Attachment C**.

CLOSING

Based on impacts identified at the site, Sigma recommends the environmental findings be shared with the VAMC to discuss WDNR reporting obligations as the land owner, including reporting a release as required by Wisconsin Statute s. 292.11, and develop a WDNR closure strategy that meets the project goals.

The shallow, reworked, impacted soil will have to be managed appropriately, if disturbed, through disposal at a WDNR licensed Subtitle D landfill facility. Furthermore, the WDNR may require that subsurface barriers (e.g., concrete slab, asphalt pavement, etc.) be maintained to prevent direct contact with underlying soils following the completion of the proposed parking structure.

¹ "Wisconsin Statewide Soil-Arsenic Background Threshold Value" WDNR RR Publication 940 (dated July 2013)

We appreciate this opportunity to work with Guidon Design and the VAMC. If you have any questions about the completed subsurface investigation activities or results, please contact us at (414) 643-4200.

Sincerely,

THE SIGMA GROUP, INC.

A handwritten signature in cursive script, appearing to read "S Oszuscik".

Stacy Oszuscik, E.I.T.
Staff Engineer

A handwritten signature in cursive script, appearing to read "Robert F. Peschel".

Robert F. Peschel, P.E.
Senior Project Manager

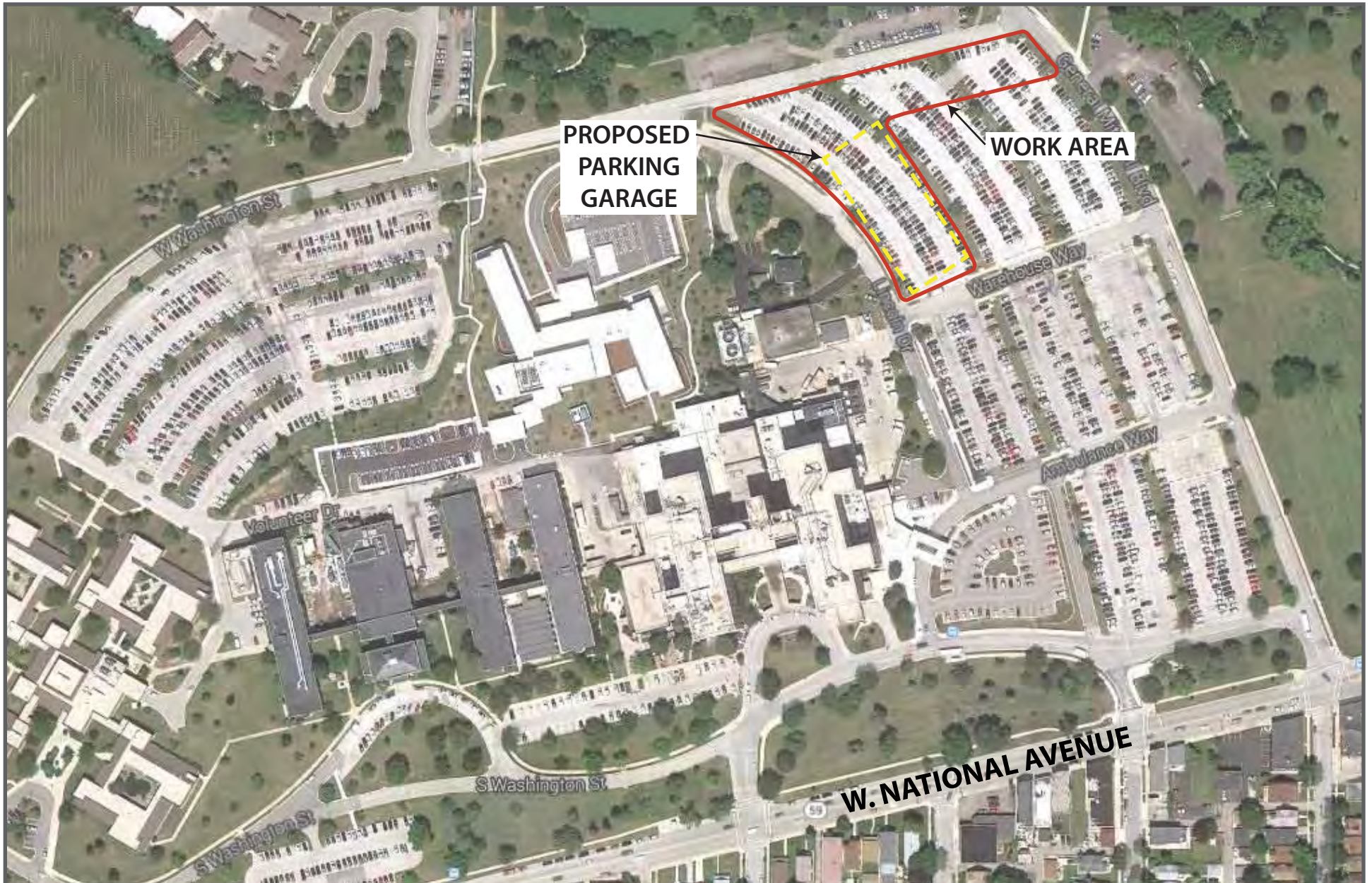
TABLE

Table 1
Soil Analytical Data
VAMC Lot 7 - 5000 W. National Ave, Milwaukee, WI 53295
Sigma Project No. 15233

Soil Sample Location:		GP-1	GP-2	GP-3	GP-4	GP-5	GP-6	Groundwater Pathway RCL ⁴	Non-Industrial Direct Contact RCL ⁵	Industrial Direct Contact RCL ⁶
Sample Depth (feet bgs):		0 - 9	2 - 15.25	2 - 8	0 - 8	0 - 12	0 - 15			
Sample Collection Date:		4/27/15								
Depth to Groundwater (feet bgs):		UNK	~ 4.5 (perched)	UNK	UNK	~ 4.5 (perched)	UNK			
Unsaturated/Smear Zone (U) or Saturated (S):		U	S	U	U	S	U			
Organic Vapor Monitor	ppm	0	0.4	0	0	0.1	0.8	NS	NS	NS
Gasoline Range Organics	mg/kg	<10	<10	<10	<10	<10	<10	NS	NS	NS
Diesel Range Organics	mg/kg	16.4 ⁴³	<10	11.2 ⁴³	<10	<10	<10	NS	NS	NS
PVOCs										
Benzene	µg/kg	<25	<25	48	<25	<25	<25	5.1	1,490	7,410
Ethylbenzene	µg/kg	<25	<25	33 "J"	<25	<25	<25	1,570	7,470	37,000
Methyl-tert-butyl-ether	µg/kg	<25	<25	<25	<25	<25	<25	27	59,400	293,000
Toluene	µg/kg	<25	<25	26.8 "J"	<25	25.4 "J"	<25	1,107.2	818,000	818,000
1,2,4-Trimethylbenzene	µg/kg	<25	<25	41	<25	<25	48	1,379.3	89,800	219,000
1,3,5-Trimethylbenzene	µg/kg	<25	<25	<25	<25	<25	40		182,000	182,000
Xylenes (total)	µg/kg	<50	<50	42 "J"	<50	<50	<50	3,940	258,000	258,000
SVOCs										
Acetophenone	µg/kg	<18	<18	<36	<18	<180	<18	NS	NS	NS
Acenaphthene	µg/kg	<18	<18	141	<18	<180	<18	NS	3,440,000	33,000,000
Acenaphthylene	µg/kg	<19	<19	77 "J"	<19	206 "J"	<19	NS	487,000	487,000
Anthracene	µg/kg	<22	<22	237	27.8 "J"	500 "J"	<22	196,744.2	17,200,000	100,000,000
Benzo(a)anthracene	µg/kg	<22	<22	490	52 "J"	1,690	53 "J"	NS	148	2,110
Benzo(a)pyrene	µg/kg	<18	<18	500	40 "J"	1,430	55 "J"	470	15	211
Benzo(b)fluoranthene	µg/kg	<21	<21	640	58 "J"	2,160	87	480	148	2,110
Benzo(ghi)perylene	µg/kg	<20	<20	278	25.5 "J"	910	40 "J"	NS	NS	NS
Benzo(k)fluoranthene	µg/kg	<22	<22	252	<22	810	37 "J"	NS	1,480	21,100
Benzyl Alcohol	µg/kg	<43	<43	<86	<43	<430	<43	NS	6,110,000	61,600,000
Butyl benzyl phthalate	µg/kg	<37	<37	<74	<37	<370	<37	NS	NS	NS
Bis(2-chloroethoxy)methane	µg/kg	<17	<17	<34	<17	<170	<17	NS	183,000	1,850,000
Bis(2-chloroethyl)ether	µg/kg	<15	<15	<30	<15	<150	<15	NS	265	1,260
Bis(2-chloroisopropyl)ether	µg/kg	<16	<16	<32	<16	<160	<16	NS	NS	NS
Bis(2-ethylhexyl)phthalate	µg/kg	45 "J"	28.7 "J"	58 "J"	39 "J"	<240	66 "J"	NS	34,700	123,000
4-Bromophenylphenyl ether	µg/kg	<17	<17	<34	<17	<170	<17	NS	NS	NS
4-Chloro-3methylphenol	µg/kg	<20	<20	<40	<20	<200	<20	NS	NS	NS
2-Chloronaphthalene	µg/kg	<19	<19	<38	<19	<190	<19	NS	NS	NS
2-Chlorophenol	µg/kg	<15	<15	<30	<15	<150	<15	NS	391,000	5,110,000
4-Chlorophenylphenyl ether	µg/kg	<21	<21	<42	<21	<210	<21	NS	NS	NS
Chrysene	µg/kg	<21	<21	410	41 "J"	1,450	55 "J"	145.1	14,800	211,000
o-Cresol	µg/kg	<24	<24	<48	<24	<240	<24	NS	3,060,000	30,800,000
m&p-Cresol	µg/kg	<38	<38	<76	<38	<380	40 "J"	NS	6,110,000	61,600,000
Dibenzofuran	µg/kg	<19	<19	41 "J"	<19	<190	<19	NS	78,200	1,020,000
Dibenzo(a,h)anthracene	µg/kg	<17	<17	70 "J"	<17	229 "J"	<17	NS	15	211
1,4-Dichlorobenzene	µg/kg	<15	<15	<30	<15	<150	<15	144	3,480	17,500
1,3-Dichlorobenzene	µg/kg	<15	<15	<30	<15	<150	<15	1,152.2	297,000	297,000
1,2-Dichlorobenzene	µg/kg	<16	<16	<32	<16	<160	<16	1,168	376,000	376,000
3,3'-Dichlorobenzidine	µg/kg	<13	<13	<26	<13	<130	<13	NS	1,080	3,830
2,4-Dichlorophenol	µg/kg	<19	<19	<38	<19	<190	<19	NS	183,000	1,850,000
Diethyl phthalate	µg/kg	<24	<24	<48	<24	<240	<24	NS	48,900,000	100,000,000
Dimethyl phthalate	µg/kg	<18	<18	<36	<18	<180	<18	NS	NS	NS
2,4-Dimethylphenol	µg/kg	<18	<18	<36	<18	<180	<18	NS	1,220,000	12,300,000
Di-n-butyl phthalate	µg/kg	<26	<26	<52	<26	<260	<26	5,037.5	6,110,000	61,600,000
2,4-Dinitrophenol	µg/kg	<6.6	<6.6	<13.2	<6.6	<66	<6.6	NS	122,000	1,230,000
2,6-Dinitrotoluene	µg/kg	<19	<19	<38	<19	<190	<19	0.1	325	1,150
2,4-Dinitrotoluene	µg/kg	<28	<28	<56	<28	<280	<28	0.1	1,560	5,520
Di-n-octyl phthalate	µg/kg	<19	<19	<38	<19	<190	<19	NS	611,000	6,160,000
Diphenylamine	µg/kg	<9.9	<9.9	<19.8	<9.9	<99	<9.9	NS	1,530,000	15,400,000
Fluoranthene	µg/kg	<18	<18	1,190	117	3,800	136	88,817.9	2,290,000	22,000,000
Fluorene	µg/kg	<18	<18	70 "J"	<18	<180	<18	14,814.8	2,290,000	22,000,000
Hexachlorobenzene	µg/kg	<17	<17	<34	<17	<170	<17	25.2	304	1,080
Hexachlorobutadiene	µg/kg	<20	<20	<40	<20	<200	<20	NS	6,230	22,100
Hexachlorocyclopentadiene	µg/kg	<11	<11	<22	<11	<110	<11	NS	366,000	3,680,000
Hexachloroethane	µg/kg	<14	<14	<28	<14	<140	<14	NS	12,200	43,100
Indeno(1,2,3-cd)pyrene	µg/kg	<18	<18	251	20.5 "J"	870	34 "J"	NS	148	2,110
Isophorone	µg/kg	<19	<19	<38	<19	<190	<19	NS	512,000	1,810,000
1-Methyl naphthalene	µg/kg	<19	<19	38 "J"	<19	<190	<19	NS	15,600	53,100
2-Methyl naphthalene	µg/kg	<18	<18	44 "J"	<18	<180	<18	NS	229,000	368,000
2-Methyl-4,6-dinitrophenol	µg/kg	<9.1	<9.1	<18.2	<9.1	<91	<9.1	NS	NS	NS
Naphthalene	µg/kg	<18	<18	80 "J"	<18	<180	<18	658.7	2,150	26,000
2-Nitroaniline	µg/kg	<15	<15	<30	<15	<150	<15	NS	606,000	6,050,000
3-Nitroaniline	µg/kg	<17	<17	<34	<17	<170	<17	NS	NS	NS
4-Nitroaniline	µg/kg	<16	<16	<32	<16	<160	<16	NS	24,300	86,200
Nitrobenzene	µg/kg	<18	<18	<36	<18	<180	<18	NS	6,920	34,900
2-Nitrophenol	µg/kg	<18	<18	<36	<18	<180	<18	NS	NS	NS
4-Nitrophenol	µg/kg	<13	<13	<26	<13	<130	<13	NS	NS	NS
n-Nitrosodimethylamine	µg/kg	<9.9	<9.9	<19.8	<9.9	<99	<9.9	NS	2	34
n-Nitrosodi-n-propylamine	µg/kg	<25	<25	<50	<25	<250	<25	NS	70	246
Pentachlorophenol (PCP)	µg/kg	<15	<15	<30	<15	<150	<15	20.2	894	2,700
Phenanthrene	µg/kg	<27	<27	670	61 "J"	1,990	62 "J"	NS	115,000	115,000
Phenol	µg/kg	<20	<20	<40	<20	<200	<20	2,299.80	18,300,000	100,000,000
Pyrene	µg/kg	<21	<21	910	98	2,550	98	54,472.5	1,720,000	16,500,000
Pyridine	µg/kg	<17	<17	<34	<17	<170	<17	6.9	78,200	1,020,000
2,3,4,6-Tetrachlorophenol	µg/kg	<21	<21	<42	<21	<210	<21	NS	1,830,000	18,500,000
1,2,4-Trichlorobenzene	µg/kg	<18	<18	<36	<18	<180	<18	408	22,100	98,700
2,4,5-Trichlorophenol	µg/kg	<20	<20	<40	<20	<200	<20	NS	6,110,000	61,600,000
2,4,6-Trichlorophenol	µg/kg	<18	<18	<36	<18	<180	<18	NS	44,200	157,000
RCRA Metals										
Arsenic	mg/kg	<0.72	1.47 "J"	<0.72	<0.72	3.55	<0.72	0.584	0.614	2.39
Barium	mg/kg	53.7	31.4	65.3	54.4	66.6	58.6	164.8	15,300	100,000
Cadmium	mg/kg	<0.08	<0.08	0.18 "J"	<0.08	<0.08	<0.08	0.752	70.2	803
Chromium	mg/kg	22.1	18.4	21.4	23.1	23.9	21.1	360,000	NS	NS
Lead	mg/kg	7.17	12.0	32.0	6.86	78.1	7.40	27	400	800
Mercury	mg/kg	0.022	0.031	0.119	0.047	0.090	0.028	0.208	3.13	3.13
Selenium	mg/kg	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	0.52	391	5,110
Silver	mg/kg	<0.34	<0.34	<0.34	<0.34	<0.34	<0.34	0.8497	391	5,110
PCBs										
PCB-1016	mg/kg	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	<0.0035	0.0094	3.93	21.2
PCB-1221	mg/kg	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054	<0.0054		0.159	0.589
PCB-1232	mg/kg	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042	<0.0042		0.159	0.589
PCB-1242	mg/kg	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.00.			

- Notes:
- Unsaturated/smear zone versus saturated soil conditions based on: (1) measured water levels in adjacent/nearby monitoring wells, (2) soil moisture conditions recorded on soil boring logs, and/or (3) soil moisture contents reported on laboratory analytical reports.
 - Analytical units:
µg/kg = micrograms per kilogram (equivalent to parts per billion, ppb)
mg/kg = milligrams per kilogram (equivalent to parts per million, ppm)
 - NA = not analyzed
 - Groundwater Pathway RCL = Residual Contaminant Level for protection of groundwater as presented on the WDNR's RCL Spreadsheet (dated December 2013) referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 23, 2014
 - Non-Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at a non-industrial property as presented on the WDNR's RCL Spreadsheet (dated December 2013) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 23, 2014
 - Industrial Direct Contact RCL = Residual Contaminant Level for protection of direct contact at an industrial property as presented on the WDNR's RCL Spreadsheet (dated December 2013) with default input parameters as referenced in WDNR guidance document PUB-RR-890 "Soil Residual Contaminant Level Determinations Using the US EPA Regional Screening Level Web Calculator", dated January 23, 2014
 - NS = no standard established
 - Laboratory flags:
"J" = Analyte detected between Limit of Detection and Limit of Quantitation
43 = Oil contamination indicated outside DRO window.
 - Exceedances:
BOLD = Concentration exceeds Groundwater Pathway RCL (unsaturated soil samples only)
ITALICS = Concentration exceeds Non-Industrial Direct Contact RCL (unsaturated soil samples only)

FIGURES



THE **SIGMA** GROUP
Single Source. Sound Solutions.

SITE MAP PARKING LOT 7 AT VAMC

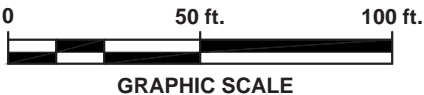
5000 W. NATIONAL AVENUE
MILWAUKEE, WISCONSIN

FIGURE

1



LEGEND	
●	Environmental Geoprobe Soil Boring Location (April 2015)
⦿	Geotechnical Soil Boring Location (April-May 2015)



ATTACHMENT A

Soil Boring Logs

Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7		License/Permit/Monitoring Number		Boring Number GP-1	
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.		Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015	
Drilling Method Direct Push (Geoprobe)					
WI Unique Well No.	DNR Well ID No.	Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
				Borehole Diameter 2.0 inches	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>		State Plane N, E S/C/N		Local Grid Location Lat _____ Long _____	
NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E				Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Milwaukee		County Code 41	
				Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	48 38	P U S H	1.5	ASPHALT, black, dry	SW			0					Lab Sample (0-9')	
			3.0	GRAVELLY SAND, tan, very loose, moist, some silt	CL			0						
2 GP	48 48	P U S H	4.5	CLAY, brown to light brown, medium stiff, moist, some silt, trace gravel and organics			0							
			6.0	SILTY CLAY, light brown, medium stiff, moist, trace gravel and grey mottling, trace organics (tree roots)	CL-MI	0								
3 GP	48 12	P U S H	7.5	Dark brown to black			0							
			9.0	REFUSAL at 9' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-1 (0-9).		0								

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>JS Hecube</i>	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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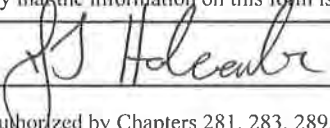
Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7			License/Permit/Monitoring Number		Boring Number GP-2		
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.			Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015		
Drilling Method Direct Push (Geoprobe)		WT Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level Feet MSL		Surface Elevation Feet MSL		Borehole Diameter 2.0 inches			
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/> State Plane N, E S/C/N NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E			Lat ° ' " Long ° ' "		Local Grid Location <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID		County Milwaukee		County Code 41		Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties						RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
1 GP	48 28	P U S H	1.5	ASPHALT, black, dry	SW			0							Lab Sample (2-15.25')
			3.0	SAND, black, medium loose, moist, some silt and gravel	SC			0.4							
2 GP	48 48	P U S H	4.5	CLAYEY SAND, brown, medium loose, very moist, little gravel, pg sand	SP			0							
			6.0	SAND, tan, medium loose, wet, pg, medium coarse sand	CL			0							
			7.5	CLAY, grey, medium soft, wet, trace gravel and grey mottling				0							
3 GP	48 46	P U S H	9.0	SAND, tan, medium loose, wet, pg, medium coarse sand				0							
			10.5		SP			0							
			12.0					0							
4 GP	48 46	P U S H	13.5					0							
			15.0					0							
5 GP	48 48	P U S H	16.5	SAND, tan, medium loose, wet, pg, medium coarse sand				0							
			18.0	SILT CLAY, black changing to grey, medium soft, wet, trace organics	CL-ML			0							
			19.5					0							
				EOB at 20' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-2 (2-15.25')											

I hereby certify that the information on this form is true and correct to the best of my knowledge.




Signature 	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7			License/Permit/Monitoring Number		Boring Number GP-3		
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.			Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015		
WI Unique Well No.		DNR Well ID No.		Common Well Name		Final Static Water Level Feet MSL	
						Surface Elevation Feet MSL	
						Borehole Diameter 2.0 inches	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location				
State Plane N, E S/C/N			Lat <input type="checkbox"/> N <input type="checkbox"/> E				
NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E			Long <input type="checkbox"/> S <input type="checkbox"/> W				
Facility ID		County Milwaukee		County Code 41		Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	48 18	P U S H	1.5	ASPHALT, black, dry	SM			0						
			3.0	SILTY SAND, white, medium loose, moist, some gravel				0						
			4.5	CLAY, dark brown, medium stiff, moist				0						
2 GP	48 48	P U S H	6.0	Stiff, little gravel, trace grey mottling	CL			0						Lab Sample (2-8')
			7.5					0						
			9.0	Very stiff				0						
3 GP	48 24	P U S H		REFUSAL at 10' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-3 (2-8').										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>JS Holcomb</i>	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7			License/Permit/Monitoring Number		Boring Number GP-4		
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.			Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015		
Drilling Method Direct Push (Geoprobe)		WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level Feet MSL		Surface Elevation Feet MSL		Borehole Diameter 2.0 inches			
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location				
State Plane N, E S/C/N			Lat ° ' "				
NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E			Long ° ' "				
Facility ID		County Milwaukee		County Code 41		Civil Town/City/ or Village Milwaukee	

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	48 30	P U S H	1.5	ASPHALT, black, dry	SM			0						
			3.0	SILTY SAND, white, medium loose, moist, some gravel				0						
2 GP	48 48	P U S H	4.5	SILTY CLAY, brown, medium soft, moist, some black to grey mottling, trace gravel	CL-MI			0						
			6.0	Very stiff, trace sand				0						
			7.5					0						
				REFUSAL at 8' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-4 (0-8').										Lab Sample (0-8')

I hereby certify that the information on this form is true and correct to the best of my knowledge.















Signature 	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7		License/Permit/Monitoring Number		Boring Number GP-5	
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.		Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015	
Drilling Method Direct Push (Geoprobe)					
WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level Feet MSL	Surface Elevation Feet MSL	Borehole Diameter 2.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location		
State Plane N, E S/C/N			Lat ° ' "		
NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E			Long ° ' "		
Facility ID		County Milwaukee	County Code 41	Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	48 24	P U S H	1.5	ASPHALT, black, dry	SM									
			3.0	SILTY SAND, white, medium loose, moist, some gravel				0						
			4.5	SILTY CLAY, brown, medium soft, moist, little gravel, trace orange mottling				0						
2 GP	48 48	P U S H	6.0	Wet	CL-MI			0.1						
			7.5					0						
3 GP	48 48	P U S H	9.0	Little red / orange mottling				0						
			10.5					0						
4 GP	48 36	P U S H	12.0	CLAY, grey, medium soft, wet, trace gravel, native				0						
			13.5					0						
			15.0					0						
5 GP	48 48	P U S H	16.5		CL			0						
			18.0					0						
			19.5					0						
				EOB at 20' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-5 (0-12')										Lab Sample (0-12')

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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Route To: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☒ Other ☐

Page 1 of 1

Facility/Project Name VA Parking Lot #7			License/Permit/Monitoring Number		Boring Number GP-6		
Boring Drilled By: Name of crew chief (first, last) and Firm Josh Bartolomey The Sigma Group, Inc.			Date Drilling Started 4/27/2015		Date Drilling Completed 4/27/2015		
Drilling Method Direct Push (Geoprobe)		WI Unique Well No.		DNR Well ID No.		Common Well Name	
Final Static Water Level Feet MSL		Surface Elevation Feet MSL		Borehole Diameter 2.0 inches			
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input type="checkbox"/>			Local Grid Location				
State Plane N, E S/C/N			Lat <input type="text"/> ° <input type="text"/> ' <input type="text"/> "				
NW 1/4 of SE 1/4 of Section 35, T 7 N, R 21 E			Long <input type="text"/> ° <input type="text"/> ' <input type="text"/> "				
Facility ID		County Milwaukee		County Code 41		Civil Town/City/ or Village Milwaukee	

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 GP	48 32	P U S H	1.5	ASPHALT, black, dry	SM			0.4						
			3.0	SILTY SAND, white, very loose, moist, some gravel, trace cobbles										
2 GP	48 48	P U S H	4.5	SILTY CLAY, brown, stiff, moist, little grey mottling, trace gravel	CL-ML			0.1						
			6.0											
3 GP	48 48	P U S H	7.5					0						
			9.0	CLAY, brown, medium soft, moist, little gravel										
4 GP	48 36	P U S H	10.5	3" seam of black clay, slight petrol odor	CL			0.8						
			12.0	Some grey mottling										
			13.5											
			15.0	REFUSAL at 15' bgs. Abandoned with bentonite chips and asphalt patch. Sampled GP-6 (0-15').										
														Lab Sample (0-15')

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature 	Firm The Sigma Group, Inc. 1300 W. Canal St Milwaukee, WI 53233	Tel: 414-643-4200 Fax: 414-643-4210
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This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

ATTACHMENT B

Borehole Abandonment Forms

Notice: Please complete Form 3300-5 and return it to the appropriate DNR office and bureau. Completion of this report is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See the instructions for more information.

Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other

(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION	
WI Unique Well No.	DNR Well ID No.	County Milwaukee	Facility Name VA Parking Lot #7	
Common Well Name GP-1		Gov't Lot (if applicable)	Facility ID	License/Permit/Monitoring No.
NW 1/4 of SE 1/4 of Sec. 35 ; T. 7 N; R. 21 E Grid Location			Street Address of Well	
ft. N. S., ft. E. W.			City, Village, or Town Milwaukee	
Local Grid Origin (estimated:) or Well Location			Present Well Owner	Original Owner
Lat Long or			Street Address or Route of Owner	
State Plane ft. N. ft. E. Zone			City, State, Zip Code	
Reason For Abandonment Investigative Boring		WI Unique Well No. of Replacement Well		

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION	(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL
Original Construction Date	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Monitoring Well	Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
<input type="checkbox"/> Water Well	Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
<input checked="" type="checkbox"/> Drillhole / Borehole	Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No
Construction Type:	Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug	Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Other (Specify)	Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No
Formation Type:	If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock	Required Method of Placing Sealing Material
Total Well Depth (ft) Casing Diameter (in.)	<input type="checkbox"/> Conductor Pipe - Gravity <input type="checkbox"/> Conductor Pipe - Pumped
(From ground surface) Casing Depth (ft.)	<input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain)
Lower Drillhole Diameter (in.) 2.0	(Bentonite Chips)
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	Sealing Materials
If Yes, To What Depth? Feet	<input type="checkbox"/> Neat Cement Grout
Depth to Water (Feet)	<input type="checkbox"/> Sand-Cement (Concrete) Grout
	<input type="checkbox"/> Concrete
	<input type="checkbox"/> Clay-Sand Slurry
	<input type="checkbox"/> Bentonite-Sand Slurry
	<input type="checkbox"/> Chipped Bentonite

(5)	Sealing Material Used	From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight
	Asphalt	Surface	0.3	
	Bentonite	0.3	9.0	

(6) Comments

(7) Name of Person or Firm Doing Sealing Work The Sigma Group		Date of Abandonment 4/27/15
Signature of Person Doing Work <i>[Signature]</i>		Date Signed 4/27/15
Street or Route 1300 W. Canal St.	Telephone Number (414) 643-4200	
City, State, Zip Code Milwaukee, WI 53233		

FOR DNR OR COUNTY USE ONLY	
Date Received	Noted By
Comments	

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Route to: <input type="checkbox"/> Drinking Water <input type="checkbox"/> Watershed/Wastewater <input type="checkbox"/> Waste Management <input checked="" type="checkbox"/> Remediation/Redevelopment <input type="checkbox"/> Other					
(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION		
WI Unique Well No.	DNR Well ID No.	County Milwaukee	Facility Name VA Parking Lot #7		
Common Well Name GP-2 Gov't Lot (if applicable)			Facility ID	License/Permit/Monitoring No.	
NW 1/4 of SE 1/4 of Sec. 35 ; T. 7 N; R. 21 E <input checked="" type="checkbox"/> W <input type="checkbox"/> Grid Location ft. <input type="checkbox"/> N <input type="checkbox"/> S, ft. <input type="checkbox"/> E <input type="checkbox"/> W. Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat _____ Long _____ or State Plane _____ ft. N. _____ ft. E. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Zone			Street Address of Well		
Reason For Abandonment Investigative Boring			City, Village, or Town Milwaukee		
WI Unique Well No. of Replacement Well			Present Well Owner		
			Original Owner		
Street Address or Route of Owner					
City, State, Zip Code					
(3) WELL/DRILLHOLE/BOREHOLE INFORMATION			(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL		
Original Construction Date _____ <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Drillhole / Borehole Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____ Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock Total Well Depth (ft) _____ Casing Diameter (in.) _____ (From ground surface) Casing Depth (ft.) _____ Lower Drillhole Diameter (in.) 2.0 Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet Depth to Water (Feet) _____			Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe - Gravity <input type="checkbox"/> Conductor Pipe - Pumped <input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain) (Bentonite Chips) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Bentonite Chips <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite-Cement Grout <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite - Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite		
(5) Sealing Material Used			From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight
Asphalt			Surface	0.3	
Bentonite			0.3	20.0	

(6) Comments

(7) Name of Person or Firm Doing Sealing Work The Sigma Group		Date of Abandonment 4/27/15
Signature of Person Doing Work <i>[Signature]</i>		Date Signed 4/27/15
Street or Route 1300 W. Canal St.	Telephone Number (414) 643-4200	
City, State, Zip Code Milwaukee, WI 53233		

FOR DNR OR COUNTY USE ONLY	
Date Received	Noted By
Comments	

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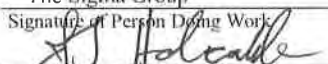
Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other _____

(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION	
WI Unique Well No.	DNR Well ID No.	County	Facility Name	
		Milwaukee	VA Parking Lot #7	
Common Well Name GP-3 Gov't Lot (if applicable)			Facility ID	License/Permit/Monitoring No.
NW 1/4 of SE 1/4 of Sec. 35 ; T. 7 N; R. 21 <input checked="" type="checkbox"/> E <input type="checkbox"/> W			Street Address of Well	
_____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S, _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.			City, Village, or Town	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/>			Milwaukee	
Lat _____ ° _____ ' _____ " Long _____ ° _____ ' _____ " or			Present Well Owner	
State Plane _____ ft. N. _____ ft. E. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Zone			Original Owner	
Reason For Abandonment			Street Address or Route of Owner	
Investigative Boring			City, State, Zip Code	
WI Unique Well No. _____ of Replacement Well				

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL	
Original Construction Date _____	If a Well Construction Report is available, please attach.	Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Monitoring Well		Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input type="checkbox"/> Water Well		Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable	
<input checked="" type="checkbox"/> Drillhole / Borehole		Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Construction Type:		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug		Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input type="checkbox"/> Other (Specify) _____		Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Formation Type:		If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No	
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Required Method of Placing Sealing Material	
Total Well Depth (ft) _____ Casing Diameter (in.) _____		<input type="checkbox"/> Conductor Pipe - Gravity <input type="checkbox"/> Conductor Pipe - Pumped	
(From ground surface) Casing Depth (ft.) _____		<input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain)	
Lower Drillhole Diameter (in.) 2.0		(Bentonite Chips)	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Sealing Materials	For monitoring wells and monitoring well boreholes only
If Yes, To What Depth? _____ Feet		<input type="checkbox"/> Neat Cement Grout	<input type="checkbox"/> Bentonite Chips
Depth to Water (Feet) _____		<input type="checkbox"/> Sand-Cement (Concrete) Grout	<input type="checkbox"/> Granular Bentonite
		<input type="checkbox"/> Concrete	<input type="checkbox"/> Bentonite-Cement Grout
		<input type="checkbox"/> Clay-Sand Slurry	<input type="checkbox"/> Bentonite - Sand Slurry
		<input type="checkbox"/> Bentonite-Sand Slurry	
		<input type="checkbox"/> Chipped Bentonite	

(5)	Sealing Material Used	From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight
	Asphalt	Surface	0.3	
	Bentonite	0.3	10.0	

(6) Comments _____

(7) Name of Person or Firm Doing Sealing Work		Date of Abandonment	
The Sigma Group		4/27/15	
Signature of Person Doing Work		Date Signed	
		4/27/15	
Street or Route		Telephone Number	
1300 W. Canal St.		(414) 643-4200	
City, State, Zip Code			
Milwaukee, WI 53233			

FOR DNR OR COUNTY USE ONLY	
Date Received	Noted By
Comments	

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Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other _____

(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION	
WI Unique Well No.	DNR Well ID No.	County Milwaukee	Facility Name VA Parking Lot #7	
Common Well Name GP-4 Gov't Lot (if applicable)			Facility ID	License/Permit/Monitoring No.
NW 1/4 of SE 1/4 of Sec. 35 ; T. 7 N; R. 21 <input checked="" type="checkbox"/> E <input type="checkbox"/> W Grid Location _____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S., _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W. Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat _____ ° _____ ' _____ " Long _____ ° _____ ' _____ " or State Plane _____ ft. N. _____ ft. E. <input type="checkbox"/> S <input type="checkbox"/> C <input type="checkbox"/> N Zone			Street Address of Well	
Reason For Abandonment Investigative Boring			City, Village, or Town Milwaukee	
WI Unique Well No. of Replacement Well			Present Well Owner	
			Original Owner	
			Street Address or Route of Owner	
			City, State, Zip Code	

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date _____ <input type="checkbox"/> Monitoring Well <input type="checkbox"/> Water Well <input checked="" type="checkbox"/> Drillhole / Borehole Construction Type: <input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug <input type="checkbox"/> Other (Specify) _____ Formation Type: <input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock Total Well Depth (ft.) _____ Casing Diameter (in.) _____ (From ground surface) Casing Depth (ft.) _____ Lower Drillhole Diameter (in.) 2.0 Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown If Yes, To What Depth? _____ Feet Depth to Water (Feet) _____		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No Required Method of Placing Sealing Material <input type="checkbox"/> Conductor Pipe - Gravity <input type="checkbox"/> Conductor Pipe - Pumped <input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain) (Bentonite Chips) Sealing Materials For monitoring wells and monitoring well boreholes only <input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Bentonite Chips <input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Granular Bentonite <input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite-Cement Grout <input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite - Sand Slurry <input type="checkbox"/> Bentonite-Sand Slurry <input type="checkbox"/> Chipped Bentonite			
(5) Sealing Material Used		From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight	
Asphalt		Surface	0.3		
Bentonite		0.3	8.0		

(6) Comments _____

(7) Name of Person or Firm Doing Sealing Work The Sigma Group		Date of Abandonment 4/27/15
Signature of Person Doing Work <i>[Signature]</i>		Date Signed 4/27/15
Street or Route 1300 W. Canal St.	Telephone Number (414) 643-4200	
City, State, Zip Code Milwaukee, WI 53233		

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Date Received	Noted By
Comments	

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Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other _____

(1) GENERAL INFORMATION

WI Unique Well No.	DNR Well ID No.	County
		Milwaukee
Common Well Name <u>GP-5</u> Gov't Lot (if applicable)		
NW 1/4 of SE 1/4 of Sec. <u>35</u> ; T. <u>7</u> N; R. <u>21</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W		
_____ ft. <input type="checkbox"/> N. <input type="checkbox"/> S., _____ ft. <input type="checkbox"/> E. <input type="checkbox"/> W.		
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/>		
Lat _____ " Long _____ " or		
State Plane _____ ft. N. _____ ft. E. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Zone		
Reason For Abandonment		WI Unique Well No.
Investigative Boring		of Replacement Well

(2) FACILITY /OWNER INFORMATION

Facility Name	
VA Parking Lot #7	
Facility ID	License/Permit/Monitoring No.
Street Address of Well	
City, Village, or Town	
Milwaukee	
Present Well Owner	Original Owner
Street Address or Route of Owner	
City, State, Zip Code	

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION

Original Construction Date _____	
<input type="checkbox"/> Monitoring Well	If a Well Construction Report is available, please attach.
<input type="checkbox"/> Water Well	
<input checked="" type="checkbox"/> Drillhole / Borehole	
Construction Type:	
<input checked="" type="checkbox"/> Drilled	<input type="checkbox"/> Driven (Sandpoint)
<input type="checkbox"/> Other (Specify) _____	
Formation Type:	
<input checked="" type="checkbox"/> Unconsolidated Formation	<input type="checkbox"/> Bedrock
Total Well Depth (ft.) _____	Casing Diameter (in.) _____
(From ground surface)	Casing Depth (ft.) _____
Lower Drillhole Diameter (in.) <u>2.0</u>	
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
If Yes, To What Depth? _____ Feet	
Depth to Water (Feet) _____	

(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL

Pump & Piping Removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
Liner(s) Removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
Screen Removed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable
Casing Left in Place?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Was Casing Cut Off Below Surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did Sealing Material Rise to Surface?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did Material Settle After 24 Hours?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes, Was Hole Retopped?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Required Method of Placing Sealing Material	
<input type="checkbox"/> Conductor Pipe - Gravity	<input type="checkbox"/> Conductor Pipe - Pumped
<input type="checkbox"/> Screened & Poured	<input type="checkbox"/> Other (Explain)
(Bentonite Chips)	
Sealing Materials	For monitoring wells and monitoring well boreholes only
<input type="checkbox"/> Neat Cement Grout	<input type="checkbox"/> Bentonite Chips
<input type="checkbox"/> Sand-Cement (Concrete) Grout	<input type="checkbox"/> Granular Bentonite
<input type="checkbox"/> Concrete	<input type="checkbox"/> Bentonite-Cement Grout
<input type="checkbox"/> Clay-Sand Slurry	<input type="checkbox"/> Bentonite - Sand Slurry
<input type="checkbox"/> Bentonite-Sand Slurry	
<input type="checkbox"/> Chipped Bentonite	

(5)	Sealing Material Used	From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight
	Asphalt	Surface	0.3	
	Bentonite	0.3	20.0	

(6) Comments _____

(7) Name of Person or Firm Doing Sealing Work		Date of Abandonment
The Sigma Group		4/27/15
Signature of Person Doing Work	Date Signed	
<i>[Signature]</i>	4/27/15	
Street or Route	Telephone Number	
1300 W. Canal St.	(414) 643-4200	
City, State, Zip Code		
Milwaukee, WI 53233		

FOR DNR OR COUNTY USE ONLY	
Date Received	Noted By
Comments	


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Route to: ☐ Drinking Water ☐ Watershed/Wastewater ☐ Waste Management ☒ Remediation/Redevelopment ☐ Other

(1) GENERAL INFORMATION			(2) FACILITY /OWNER INFORMATION	
WI Unique Well No.	DNR Well ID No.	County	Facility Name	
		Milwaukee	VA Parking Lot #7	
Common Well Name		GP-6	Facility ID	License/Permit/Monitoring No.
		Gov't Lot (if applicable)		
NW 1/4 of SE 1/4 of Sec. 35 ; T. 7 N; R. 21		<input checked="" type="checkbox"/> E <input type="checkbox"/> W	Street Address of Well	
ft. <input type="checkbox"/> N. <input type="checkbox"/> S., ft. <input type="checkbox"/> E. <input type="checkbox"/> W.			City, Village, or Town	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/>			Milwaukee	
Lat <input type="checkbox"/> ° <input type="checkbox"/> ' <input type="checkbox"/> " Long <input type="checkbox"/> ° <input type="checkbox"/> ' <input type="checkbox"/> " or			Present Well Owner	
State Plane ft. N. ft. E. <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Zone			Original Owner	
Reason For Abandonment		WI Unique Well No.	Street Address or Route of Owner	
Investigative Boring		of Replacement Well	City, State, Zip Code	

(3) WELL/DRILLHOLE/BOREHOLE INFORMATION		(4) PUMP, LINER, SCREEN, CASING, & SEALING MATERIAL			
Original Construction Date		Pump & Piping Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable			
<input type="checkbox"/> Monitoring Well		Liner(s) Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable			
<input type="checkbox"/> Water Well		Screen Removed? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Applicable			
<input checked="" type="checkbox"/> Drillhole / Borehole		Casing Left in Place? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Construction Type:		Was Casing Cut Off Below Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<input checked="" type="checkbox"/> Drilled <input type="checkbox"/> Driven (Sandpoint) <input type="checkbox"/> Dug		Did Sealing Material Rise to Surface? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<input type="checkbox"/> Other (Specify)		Did Material Settle After 24 Hours? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Formation Type:		If Yes, Was Hole Retopped? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<input checked="" type="checkbox"/> Unconsolidated Formation <input type="checkbox"/> Bedrock		Required Method of Placing Sealing Material			
Total Well Depth (ft) Casing Diameter (in.)		<input type="checkbox"/> Conductor Pipe - Gravity <input type="checkbox"/> Conductor Pipe - Pumped			
(From ground surface) Casing Depth (ft.)		<input type="checkbox"/> Screened & Poured <input type="checkbox"/> Other (Explain)			
Lower Drillhole Diameter (in.) 2.0		(Bentonite Chips)			
Was Well Annular Space Grouted? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		Sealing Materials			
If Yes, To What Depth? Feet		For monitoring wells and monitoring well boreholes only			
Depth to Water (Feet)		<input type="checkbox"/> Neat Cement Grout <input type="checkbox"/> Bentonite Chips			
		<input type="checkbox"/> Sand-Cement (Concrete) Grout <input type="checkbox"/> Granular Bentonite			
		<input type="checkbox"/> Concrete <input type="checkbox"/> Bentonite-Cement Grout			
		<input type="checkbox"/> Clay-Sand Slurry <input type="checkbox"/> Bentonite - Sand Slurry			
		<input type="checkbox"/> Bentonite-Sand Slurry			
		<input type="checkbox"/> Chipped Bentonite			
(5) Sealing Material Used		From (Ft.)	To (Ft.)	Mix Ratio or Mud Weight	
Asphalt		Surface	0.3		
Bentonite		0.3	15.0		

(6) Comments

(7) Name of Person or Firm Doing Sealing Work		Date of Abandonment	
The Sigma Group		4/27/15	
Signature of Person Doing Work		Date Signed	
		4/27/15	
Street or Route		Telephone Number	
1300 W. Canal St.		(414) 643-4200	
City, State, Zip Code			
Milwaukee, WI 53233			

FOR DNR OR COUNTY USE ONLY	
Date Received	Noted By
Comments	

ATTACHMENT C

Soil Laboratory Analytical Reports

Synergy Environmental Lab, INC.

1990 Prospect Ct., Appleton, WI 54914 *P 920-830-2455 * F 920-733-0631

STACY OSZUSCIK
THE SIGMA GROUP, INC.
1300 W. CANAL STREET
MILWAUKEE, WI 53233

Report Date 05-May-15

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834A
Sample ID GP-1 (0-9')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	84.5	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	< 0.72	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	53.7	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	22.1	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	7.17	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.022	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	16.4	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1 43
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		4/30/2015	LPA	1
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		4/30/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		4/30/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		4/30/2015	LPA	1
Toluene	< 0.025	mg/kg	0.015	0.048	1	GRO95/8021		4/30/2015	LPA	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.011	0.036	1	GRO95/8021		4/30/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		4/30/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		4/30/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		4/30/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834A
Sample ID GP-1 (0-9")
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthylene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
Anthracene	< 22	ug/kg	22	73	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)anthracene	< 22	ug/kg	22	71	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)pyrene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(b)fluoranthene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(g,h,i)perylene	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(k)fluoranthene	< 22	ug/kg	22	69	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzyl Alcohol	< 43	ug/kg	43	139	1	8270C	4/30/2015	5/4/2015	MDK	1
Butyl benzyl phthalate	< 37	ug/kg	37	118	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethoxy)methane	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethyl)ether	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 16	ug/kg	16	49	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-ethylhexyl)phthalate	45 "J"	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	5
4-Bromophenylphenyl ether	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chloro-3-methylphenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chloronaphthalene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chlorophenol	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chlorophenylphenyl ether	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Chrysene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
o-Cresol	< 24	ug/kg	24	77	1	8270C	4/30/2015	5/4/2015	MDK	1
m & p-Cresol	< 38	ug/kg	38	122	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzofuran	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzo(a,h)anthracene	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
1,4-Dichlorobenzene	< 15	ug/kg	15	48	1	8270C	4/30/2015	5/4/2015	MDK	1
1,3-Dichlorobenzene	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2-Dichlorobenzene	< 16	ug/kg	16	51	1	8270C	4/30/2015	5/4/2015	MDK	1
3,3'-Dichlorobenzidine	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dichlorophenol	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Diethyl phthalate	< 24	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	1
Dimethyl phthalate	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dimethylphenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-butyl phthalate	< 26	ug/kg	26	84	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrophenol	< 6.6	ug/kg	6.6	21	1	8270C	4/30/2015	5/4/2015	MDK	8
2,6-Dinitrotoluene	< 19	ug/kg	19	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrotoluene	< 28	ug/kg	28	88	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-octyl phthalate	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Diphenylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluoranthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluorene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobenzene	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobutadiene	< 20	ug/kg	20	64	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorocyclopentadiene	< 11	ug/kg	11	34	1	8270C	4/30/2015	5/4/2015	MDK	8
Hexachloroethane	< 14	ug/kg	14	44	1	8270C	4/30/2015	5/4/2015	MDK	1
Indeno(1,2,3-cd)pyrene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Isophorone	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
1-Methyl naphthalene	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl naphthalene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 9.1	ug/kg	9.1	29	1	8270C	4/30/2015	5/4/2015	MDK	8
Naphthalene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitroaniline	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
3-Nitroaniline	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitroaniline	< 16	ug/kg	16	50	1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitrophenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitrophenol	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834A
Sample ID GP-1 (0-9')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
n-Nitrosodimethylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodi-n-propylamine	< 25	ug/kg	25	79	1	8270C	4/30/2015	5/4/2015	MDK	1
Pentachlorophenol (PCP)	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenanthrene	< 27	ug/kg	27	87	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyrene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyridine	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 21	ug/kg	21	65	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2,4-Trichlorobenzene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,5-Trichlorophenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Trichlorophenol	< 18	ug/kg	18	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorobiphenyl-surrogate	69	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorophenol-surrogate	75	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene-d5-surrogate	62	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol-d6-surrogate	67	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
p-Terphenyl-d14-surrogate	87	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Tribromophenol-surrogate	79	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834B
Sample ID GP-2 (2-15.25')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	83.5	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	1.47 "J"	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	31.4	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	18.4	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	12.0	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.031	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	< 10	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		4/30/2015	LPA	1
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		4/30/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		4/30/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		4/30/2015	LPA	1
Toluene	< 0.025	mg/kg	0.015	0.048	1	GRO95/8021		4/30/2015	LPA	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.011	0.036	1	GRO95/8021		4/30/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		4/30/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		4/30/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		4/30/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthylene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
Anthracene	< 22	ug/kg	22	73	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)anthracene	< 22	ug/kg	22	71	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)pyrene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(b)fluoranthene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(g,h,i)perylene	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(k)fluoranthene	< 22	ug/kg	22	69	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzyl Alcohol	< 43	ug/kg	43	139	1	8270C	4/30/2015	5/4/2015	MDK	1
Butyl benzyl phthalate	< 37	ug/kg	37	118	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethoxy)methane	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethyl)ether	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 16	ug/kg	16	49	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-ethylhexyl)phthalate	28.7 "J"	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	5
4-Bromophenylphenyl ether	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chloro-3-methylphenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chloronaphthalene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chlorophenol	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chlorophenylphenyl ether	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Chrysene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834B
Sample ID GP-2 (2-15.25')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
o-Cresol	< 24	ug/kg	24	77	1	8270C	4/30/2015	5/4/2015	MDK	1
m & p-Cresol	< 38	ug/kg	38	122	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzofuran	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzo(a,h)anthracene	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
1,4-Dichlorobenzene	< 15	ug/kg	15	48	1	8270C	4/30/2015	5/4/2015	MDK	1
1,3-Dichlorobenzene	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2-Dichlorobenzene	< 16	ug/kg	16	51	1	8270C	4/30/2015	5/4/2015	MDK	1
3,3'-Dichlorobenzidine	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dichlorophenol	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Diethyl phthalate	< 24	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	1
Dimethyl phthalate	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dimethylphenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-butyl phthalate	< 26	ug/kg	26	84	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrophenol	< 6.6	ug/kg	6.6	21	1	8270C	4/30/2015	5/4/2015	MDK	8
2,6-Dinitrotoluene	< 19	ug/kg	19	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrotoluene	< 28	ug/kg	28	88	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-octyl phthalate	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Diphenylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluoranthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluorene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobenzene	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobutadiene	< 20	ug/kg	20	64	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorocyclopentadiene	< 11	ug/kg	11	34	1	8270C	4/30/2015	5/4/2015	MDK	8
Hexachloroethane	< 14	ug/kg	14	44	1	8270C	4/30/2015	5/4/2015	MDK	1
Indeno(1,2,3-cd)pyrene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Isophorone	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
1-Methyl naphthalene	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl naphthalene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 9.1	ug/kg	9.1	29	1	8270C	4/30/2015	5/4/2015	MDK	8
Naphthalene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitroaniline	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
3-Nitroaniline	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitroaniline	< 16	ug/kg	16	50	1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitrophenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitrophenol	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodimethylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodi-n-propylamine	< 25	ug/kg	25	79	1	8270C	4/30/2015	5/4/2015	MDK	1
Pentachlorophenol (PCP)	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenanthrene	< 27	ug/kg	27	87	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyrene	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyridine	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 21	ug/kg	21	65	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2,4-Trichlorobenzene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,5-Trichlorophenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Trichlorophenol	< 18	ug/kg	18	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorobiphenyl-surrogate	58	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorophenol-surrogate	68	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene-d5-surrogate	61	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol-d6-surrogate	59	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
p-Terphenyl-d14-surrogate	72	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Tribromophenol-surrogate	78	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834C
Sample ID GP-3 (2-8')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	87.8	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	< 0.72	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	65.3	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	0.18 "J"	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	21.4	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	32.0	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.119	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	11.2	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1 43
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		4/30/2015	LPA	1
Benzene	0.048	mg/kg	0.014	0.046	1	GRO95/8021		4/30/2015	LPA	1
Ethylbenzene	0.033 "J"	mg/kg	0.014	0.045	1	GRO95/8021		4/30/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		4/30/2015	LPA	1
Toluene	0.0268 "J"	mg/kg	0.015	0.048	1	GRO95/8021		4/30/2015	LPA	1
1,2,4-Trimethylbenzene	0.041	mg/kg	0.011	0.036	1	GRO95/8021		4/30/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		4/30/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		4/30/2015	LPA	1
o-Xylene	0.042 "J"	mg/kg	0.024	0.078	1	GRO95/8021		4/30/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 36	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthene	141	ug/kg	36	112	2	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthylene	77 "J"	ug/kg	38	120	2	8270C	4/30/2015	5/4/2015	MDK	1
Anthracene	237	ug/kg	44	146	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)anthracene	490	ug/kg	44	142	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)pyrene	500	ug/kg	36	116	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(b)fluoranthene	640	ug/kg	42	132	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(g,h,i)perylene	278	ug/kg	40	124	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(k)fluoranthene	252	ug/kg	44	138	2	8270C	4/30/2015	5/4/2015	MDK	1
Benzyl Alcohol	< 86	ug/kg	86	278	2	8270C	4/30/2015	5/4/2015	MDK	1
Butyl benzyl phthalate	< 74	ug/kg	74	236	2	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethoxy)methane	< 34	ug/kg	34	110	2	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethyl)ether	< 30	ug/kg	30	94	2	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 32	ug/kg	32	98	2	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-ethylhexyl)phthalate	58 "J"	ug/kg	48	152	2	8270C	4/30/2015	5/4/2015	MDK	5
4-Bromophenylphenyl ether	< 34	ug/kg	34	106	2	8270C	4/30/2015	5/4/2015	MDK	1
4-Chloro-3-methylphenol	< 40	ug/kg	40	126	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Chloronaphthalene	< 38	ug/kg	38	120	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Chlorophenol	< 30	ug/kg	30	98	2	8270C	4/30/2015	5/4/2015	MDK	1
4-Chlorophenylphenyl ether	< 42	ug/kg	42	132	2	8270C	4/30/2015	5/4/2015	MDK	1
Chrysene	410	ug/kg	42	132	2	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834C
Sample ID GP-3 (2-8')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
o-Cresol	< 48	ug/kg	48	154	2	8270C	4/30/2015	5/4/2015	MDK	1
m & p-Cresol	< 76	ug/kg	76	244	2	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzofuran	41 "J"	ug/kg	38	122	2	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzo(a,h)anthracene	70 "J"	ug/kg	34	108	2	8270C	4/30/2015	5/4/2015	MDK	1
1,4-Dichlorobenzene	< 30	ug/kg	30	96	2	8270C	4/30/2015	5/4/2015	MDK	1
1,3-Dichlorobenzene	< 30	ug/kg	30	98	2	8270C	4/30/2015	5/4/2015	MDK	1
1,2-Dichlorobenzene	< 32	ug/kg	32	102	2	8270C	4/30/2015	5/4/2015	MDK	1
3,3'-Dichlorobenzidine	< 26	ug/kg	26	84	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dichlorophenol	< 38	ug/kg	38	124	2	8270C	4/30/2015	5/4/2015	MDK	1
Diethyl phthalate	< 48	ug/kg	48	152	2	8270C	4/30/2015	5/4/2015	MDK	1
Dimethyl phthalate	< 36	ug/kg	36	116	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dimethylphenol	< 36	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-butyl phthalate	< 52	ug/kg	52	168	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrophenol	< 13.2	ug/kg	13.2	42	2	8270C	4/30/2015	5/4/2015	MDK	8
2,6-Dinitrotoluene	< 38	ug/kg	38	118	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrotoluene	< 56	ug/kg	56	176	2	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-octyl phthalate	< 38	ug/kg	38	122	2	8270C	4/30/2015	5/4/2015	MDK	1
Diphenylamine	< 19.8	ug/kg	19.8	64	2	8270C	4/30/2015	5/4/2015	MDK	1
Fluoranthene	1190	ug/kg	36	112	2	8270C	4/30/2015	5/4/2015	MDK	1
Fluorene	70 "J"	ug/kg	36	116	2	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobenzene	< 34	ug/kg	34	110	2	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobutadiene	< 40	ug/kg	40	128	2	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorocyclopentadiene	< 22	ug/kg	22	68	2	8270C	4/30/2015	5/4/2015	MDK	8
Hexachloroethane	< 28	ug/kg	28	88	2	8270C	4/30/2015	5/4/2015	MDK	1
Indeno(1,2,3-cd)pyrene	251	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
Isophorone	< 38	ug/kg	38	122	2	8270C	4/30/2015	5/4/2015	MDK	1
1-Methyl naphthalene	38 "J"	ug/kg	38	124	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl naphthalene	44 "J"	ug/kg	36	116	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 18.2	ug/kg	18.2	58	2	8270C	4/30/2015	5/4/2015	MDK	8
Naphthalene	80 "J"	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitroaniline	< 30	ug/kg	30	98	2	8270C	4/30/2015	5/4/2015	MDK	1
3-Nitroaniline	< 34	ug/kg	34	106	2	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitroaniline	< 32	ug/kg	32	100	2	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene	< 36	ug/kg	36	112	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitrophenol	< 36	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitrophenol	< 26	ug/kg	26	84	2	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodimethylamine	< 19.8	ug/kg	19.8	64	2	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodi-n-propylamine	< 50	ug/kg	50	158	2	8270C	4/30/2015	5/4/2015	MDK	1
Pentachlorophenol (PCP)	< 30	ug/kg	30	94	2	8270C	4/30/2015	5/4/2015	MDK	1
Phenanthrene	670	ug/kg	54	174	2	8270C	4/30/2015	5/4/2015	MDK	1
Phenol	< 40	ug/kg	40	124	2	8270C	4/30/2015	5/4/2015	MDK	1
Pyrene	910	ug/kg	42	132	2	8270C	4/30/2015	5/4/2015	MDK	1
Pyridine	< 34	ug/kg	34	108	2	8270C	4/30/2015	5/4/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 42	ug/kg	42	130	2	8270C	4/30/2015	5/4/2015	MDK	1
1,2,4-Trichlorobenzene	< 36	ug/kg	36	114	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4,5-Trichlorophenol	< 40	ug/kg	40	126	2	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Trichlorophenol	< 36	ug/kg	36	118	2	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorobiphenyl-surrogate	62	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorophenol-surrogate	67	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene-d5-surrogate	63	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1
Phenol-d6-surrogate	60	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1
p-Terphenyl-d14-surrogate	80	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Tribromophenol-surrogate	86	REC %			2	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834D
Sample ID GP-4 (0-8')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	85.6	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	< 0.72	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	54.4	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	23.1	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	6.86	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.047	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	< 10	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		4/30/2015	LPA	1
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		4/30/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		4/30/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		4/30/2015	LPA	1
Toluene	< 0.025	mg/kg	0.015	0.048	1	GRO95/8021		4/30/2015	LPA	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.011	0.036	1	GRO95/8021		4/30/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		4/30/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		4/30/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		4/30/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthylene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
Anthracene	27.8 "J"	ug/kg	22	73	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)anthracene	52 "J"	ug/kg	22	71	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)pyrene	40 "J"	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(b)fluoranthene	58 "J"	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(g,h,i)perylene	25.5 "J"	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(k)fluoranthene	< 22	ug/kg	22	69	1	8270C	4/30/2015	5/4/2015	MDK	1
Benzyl Alcohol	< 43	ug/kg	43	139	1	8270C	4/30/2015	5/4/2015	MDK	1
Butyl benzyl phthalate	< 37	ug/kg	37	118	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethoxy)methane	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethyl)ether	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 16	ug/kg	16	49	1	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-ethylhexyl)phthalate	39 "J"	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	5
4-Bromophenylphenyl ether	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chloro-3-methylphenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chloronaphthalene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Chlorophenol	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Chlorophenylphenyl ether	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Chrysene	41 "J"	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834D
Sample ID GP-4 (0-8')
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
o-Cresol	< 24	ug/kg	24	77	1	8270C	4/30/2015	5/4/2015	MDK	1
m & p-Cresol	< 38	ug/kg	38	122	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzofuran	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzo(a,h)anthracene	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
1,4-Dichlorobenzene	< 15	ug/kg	15	48	1	8270C	4/30/2015	5/4/2015	MDK	1
1,3-Dichlorobenzene	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2-Dichlorobenzene	< 16	ug/kg	16	51	1	8270C	4/30/2015	5/4/2015	MDK	1
3,3'-Dichlorobenzidine	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dichlorophenol	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Diethyl phthalate	< 24	ug/kg	24	76	1	8270C	4/30/2015	5/4/2015	MDK	1
Dimethyl phthalate	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dimethylphenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-butyl phthalate	< 26	ug/kg	26	84	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrophenol	< 6.6	ug/kg	6.6	21	1	8270C	4/30/2015	5/4/2015	MDK	8
2,6-Dinitrotoluene	< 19	ug/kg	19	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrotoluene	< 28	ug/kg	28	88	1	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-octyl phthalate	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
Diphenylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluoranthene	117	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
Fluorene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobenzene	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobutadiene	< 20	ug/kg	20	64	1	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorocyclopentadiene	< 11	ug/kg	11	34	1	8270C	4/30/2015	5/4/2015	MDK	8
Hexachloroethane	< 14	ug/kg	14	44	1	8270C	4/30/2015	5/4/2015	MDK	1
Indeno(1,2,3-cd)pyrene	20.5 "J"	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
Isophorone	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/4/2015	MDK	1
1-Methyl naphthalene	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl naphthalene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 9.1	ug/kg	9.1	29	1	8270C	4/30/2015	5/4/2015	MDK	8
Naphthalene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitroaniline	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/4/2015	MDK	1
3-Nitroaniline	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitroaniline	< 16	ug/kg	16	50	1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitrophenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitrophenol	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodimethylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodi-n-propylamine	< 25	ug/kg	25	79	1	8270C	4/30/2015	5/4/2015	MDK	1
Pentachlorophenol (PCP)	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenanthrene	61 "J"	ug/kg	27	87	1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyrene	98	ug/kg	21	66	1	8270C	4/30/2015	5/4/2015	MDK	1
Pyridine	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/4/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 21	ug/kg	21	65	1	8270C	4/30/2015	5/4/2015	MDK	1
1,2,4-Trichlorobenzene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,5-Trichlorophenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Trichlorophenol	< 18	ug/kg	18	59	1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorobiphenyl-surrogate	54	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorophenol-surrogate	62	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene-d5-surrogate	54	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
Phenol-d6-surrogate	52	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
p-Terphenyl-d14-surrogate	76	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Tribromophenol-surrogate	68	REC %			1	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834E
Sample ID GP-5 (0-12")
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	84.4	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	3.55	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	66.6	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	23.9	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	78.1	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.090	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	< 10	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		5/1/2015	LPA	1
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		5/1/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		5/1/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		5/1/2015	LPA	1
Toluene	0.0254 "J"	mg/kg	0.015	0.048	1	GRO95/8021		5/1/2015	LPA	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.011	0.036	1	GRO95/8021		5/1/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		5/1/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		5/1/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		5/1/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 180	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthene	< 180	ug/kg	180	560	10	8270C	4/30/2015	5/4/2015	MDK	1
Acenaphthylene	206 "J"	ug/kg	190	600	10	8270C	4/30/2015	5/4/2015	MDK	1
Anthracene	500 "J"	ug/kg	220	730	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)anthracene	1690	ug/kg	220	710	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(a)pyrene	1430	ug/kg	180	580	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(b)fluoranthene	2160	ug/kg	210	660	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(g,h,i)perylene	910	ug/kg	200	620	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzo(k)fluoranthene	810	ug/kg	220	690	10	8270C	4/30/2015	5/4/2015	MDK	1
Benzyl Alcohol	< 430	ug/kg	430	1390	10	8270C	4/30/2015	5/4/2015	MDK	1
Butyl benzyl phthalate	< 370	ug/kg	370	1180	10	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethoxy)methane	< 170	ug/kg	170	550	10	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroethyl)ether	< 150	ug/kg	150	470	10	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 160	ug/kg	160	490	10	8270C	4/30/2015	5/4/2015	MDK	1
Bis(2-ethylhexyl)phthalate	< 240	ug/kg	240	760	10	8270C	4/30/2015	5/4/2015	MDK	5
4-Bromophenylphenyl ether	< 170	ug/kg	170	530	10	8270C	4/30/2015	5/4/2015	MDK	1
4-Chloro-3-methylphenol	< 200	ug/kg	200	630	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Chloronaphthalene	< 190	ug/kg	190	600	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Chlorophenol	< 150	ug/kg	150	490	10	8270C	4/30/2015	5/4/2015	MDK	1
4-Chlorophenylphenyl ether	< 210	ug/kg	210	660	10	8270C	4/30/2015	5/4/2015	MDK	1
Chrysene	1450	ug/kg	210	660	10	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834E
Sample ID GP-5 (0-12")
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
o-Cresol	< 240	ug/kg	240	770	10	8270C	4/30/2015	5/4/2015	MDK	1
m & p-Cresol	< 380	ug/kg	380	1220	10	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzofuran	< 190	ug/kg	190	610	10	8270C	4/30/2015	5/4/2015	MDK	1
Dibenzo(a,h)anthracene	229 "J"	ug/kg	170	540	10	8270C	4/30/2015	5/4/2015	MDK	1
1,4-Dichlorobenzene	< 150	ug/kg	150	480	10	8270C	4/30/2015	5/4/2015	MDK	1
1,3-Dichlorobenzene	< 150	ug/kg	150	490	10	8270C	4/30/2015	5/4/2015	MDK	1
1,2-Dichlorobenzene	< 160	ug/kg	160	510	10	8270C	4/30/2015	5/4/2015	MDK	1
3,3'-Dichlorobenzidine	< 130	ug/kg	130	420	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dichlorophenol	< 190	ug/kg	190	620	10	8270C	4/30/2015	5/4/2015	MDK	1
Diethyl phthalate	< 240	ug/kg	240	760	10	8270C	4/30/2015	5/4/2015	MDK	1
Dimethyl phthalate	< 180	ug/kg	180	580	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dimethylphenol	< 180	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-butyl phthalate	< 260	ug/kg	260	840	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrophenol	< 66	ug/kg	66	210	10	8270C	4/30/2015	5/4/2015	MDK	8
2,6-Dinitrotoluene	< 190	ug/kg	190	590	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4-Dinitrotoluene	< 280	ug/kg	280	880	10	8270C	4/30/2015	5/4/2015	MDK	1
Di-n-octyl phthalate	< 190	ug/kg	190	610	10	8270C	4/30/2015	5/4/2015	MDK	1
Diphenylamine	< 99	ug/kg	99	320	10	8270C	4/30/2015	5/4/2015	MDK	1
Fluoranthene	3800	ug/kg	180	560	10	8270C	4/30/2015	5/4/2015	MDK	1
Fluorene	< 180	ug/kg	180	580	10	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobenzene	< 170	ug/kg	170	550	10	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorobutadiene	< 200	ug/kg	200	640	10	8270C	4/30/2015	5/4/2015	MDK	1
Hexachlorocyclopentadiene	< 110	ug/kg	110	340	10	8270C	4/30/2015	5/4/2015	MDK	8
Hexachloroethane	< 140	ug/kg	140	440	10	8270C	4/30/2015	5/4/2015	MDK	1
Indeno(1,2,3-cd)pyrene	870	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
Isophorone	< 190	ug/kg	190	610	10	8270C	4/30/2015	5/4/2015	MDK	1
1-Methyl naphthalene	< 190	ug/kg	190	620	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl naphthalene	< 180	ug/kg	180	580	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 91	ug/kg	91	290	10	8270C	4/30/2015	5/4/2015	MDK	8
Naphthalene	< 180	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitroaniline	< 150	ug/kg	150	490	10	8270C	4/30/2015	5/4/2015	MDK	1
3-Nitroaniline	< 170	ug/kg	170	530	10	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitroaniline	< 160	ug/kg	160	500	10	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene	< 180	ug/kg	180	560	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Nitrophenol	< 180	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
4-Nitrophenol	< 130	ug/kg	130	420	10	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodimethylamine	< 99	ug/kg	99	320	10	8270C	4/30/2015	5/4/2015	MDK	1
n-Nitrosodi-n-propylamine	< 250	ug/kg	250	790	10	8270C	4/30/2015	5/4/2015	MDK	1
Pentachlorophenol (PCP)	< 150	ug/kg	150	470	10	8270C	4/30/2015	5/4/2015	MDK	1
Phenanthrene	1990	ug/kg	270	870	10	8270C	4/30/2015	5/4/2015	MDK	1
Phenol	< 200	ug/kg	200	620	10	8270C	4/30/2015	5/4/2015	MDK	1
Pyrene	2550	ug/kg	210	660	10	8270C	4/30/2015	5/4/2015	MDK	1
Pyridine	< 170	ug/kg	170	540	10	8270C	4/30/2015	5/4/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 210	ug/kg	210	650	10	8270C	4/30/2015	5/4/2015	MDK	1
1,2,4-Trichlorobenzene	< 180	ug/kg	180	570	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4,5-Trichlorophenol	< 200	ug/kg	200	630	10	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Trichlorophenol	< 180	ug/kg	180	590	10	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorobiphenyl-surrogate	47	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1
2-Fluorophenol-surrogate	52	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1
Nitrobenzene-d5-surrogate	42	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1
Phenol-d6-surrogate	23	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1
p-Terphenyl-d14-surrogate	54	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1
2,4,6-Tribromophenol-surrogate	49	REC %			10	8270C	4/30/2015	5/4/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834F
Sample ID GP-6 (0-15")
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
General										
General										
Solids Percent	83.0	%			1	5021		4/28/2015	LPA	1
Inorganic										
Metals										
Arsenic, Total	< 0.72	mg/Kg	0.72	2.3	1	6010B		5/5/2015	CWT	1
Barium, Total	58.6	mg/Kg	0.18	0.58	1	6010B		5/5/2015	CWT	1
Cadmium, Total	< 0.08	mg/Kg	0.08	0.25	1	6010B		5/5/2015	CWT	1
Chromium, Total	21.1	mg/Kg	0.13	0.41	1	6010B		5/5/2015	CWT	1
Lead, Total	7.40	mg/Kg	0.3	0.96	1	6010B		5/5/2015	CWT	1
Mercury, Total	0.028	mg/kg	0.0028	0.02	1	7471		5/5/2015	CWT	1
Selenium, Total	< 0.7	mg/Kg	0.7	2.23	1	6010B		5/5/2015	CWT	1
Silver, Total	< 0.34	mg/Kg	0.34	1.09	1	6010B		5/4/2015	CWT	1
Organic										
General										
Diesel Range Organics	< 10	mg/kg	1.43	4.54	1	DRO95		5/5/2015	MDK	1
GRO/PVOC										
Gasoline Range Organics	< 10	mg/kg	1.8	5.8	1	GRO95/8021		5/1/2015	LPA	1
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		5/1/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		5/1/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		5/1/2015	LPA	1
Toluene	< 0.025	mg/kg	0.015	0.048	1	GRO95/8021		5/1/2015	LPA	1
1,2,4-Trimethylbenzene	0.048	mg/kg	0.011	0.036	1	GRO95/8021		5/1/2015	LPA	1
1,3,5-Trimethylbenzene	0.040	mg/kg	0.012	0.038	1	GRO95/8021		5/1/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		5/1/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		5/1/2015	LPA	1
PCB'S										
PCB-1016	< 0.0035	mg/kg	0.0035	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1221	< 0.0054	mg/kg	0.0054	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1232	< 0.0042	mg/kg	0.0042	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1242	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1248	< 0.0032	mg/kg	0.0032	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1254	< 0.0047	mg/kg	0.0047	0.017	1	EPA 8082A		4/30/2015	ESC	1
PCB-1260	< 0.0049	mg/kg	0.0049	0.017	1	EPA 8082A		4/30/2015	ESC	1
Semi Volatiles										
Acetophenone	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
Acenaphthene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/5/2015	MDK	1
Acenaphthylene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/5/2015	MDK	1
Anthracene	< 22	ug/kg	22	73	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzo(a)anthracene	53 "J"	ug/kg	22	71	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzo(a)pyrene	55 "J"	ug/kg	18	58	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzo(b)fluoranthene	87	ug/kg	21	66	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzo(g,h,i)perylene	40 "J"	ug/kg	20	62	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzo(k)fluoranthene	37 "J"	ug/kg	22	69	1	8270C	4/30/2015	5/5/2015	MDK	1
Benzyl Alcohol	< 43	ug/kg	43	139	1	8270C	4/30/2015	5/5/2015	MDK	1
Butyl benzyl phthalate	< 37	ug/kg	37	118	1	8270C	4/30/2015	5/5/2015	MDK	1
Bis(2-chloroethoxy)methane	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/5/2015	MDK	1
Bis(2-chloroethyl)ether	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/5/2015	MDK	1
Bis(2-chloroisopropyl)ether	< 16	ug/kg	16	49	1	8270C	4/30/2015	5/5/2015	MDK	1
Bis(2-ethylhexyl)phthalate	66 "J"	ug/kg	24	76	1	8270C	4/30/2015	5/5/2015	MDK	5
4-Bromophenylphenyl ether	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/5/2015	MDK	1
4-Chloro-3-methylphenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Chloronaphthalene	< 19	ug/kg	19	60	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Chlorophenol	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/5/2015	MDK	1
4-Chlorophenylphenyl ether	< 21	ug/kg	21	66	1	8270C	4/30/2015	5/5/2015	MDK	1
Chrysene	55 "J"	ug/kg	21	66	1	8270C	4/30/2015	5/5/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834F
Sample ID GP-6 (0-15")
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
o-Cresol	< 24	ug/kg	24	77	1	8270C	4/30/2015	5/5/2015	MDK	1
m & p-Cresol	40 "J"	ug/kg	38	122	1	8270C	4/30/2015	5/5/2015	MDK	1
Dibenzofuran	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/5/2015	MDK	1
Dibenzo(a,h)anthracene	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/5/2015	MDK	1
1,4-Dichlorobenzene	< 15	ug/kg	15	48	1	8270C	4/30/2015	5/5/2015	MDK	1
1,3-Dichlorobenzene	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/5/2015	MDK	1
1,2-Dichlorobenzene	< 16	ug/kg	16	51	1	8270C	4/30/2015	5/5/2015	MDK	1
3,3'-Dichlorobenzidine	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4-Dichlorophenol	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/5/2015	MDK	1
Diethyl phthalate	< 24	ug/kg	24	76	1	8270C	4/30/2015	5/5/2015	MDK	1
Dimethyl phthalate	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4-Dimethylphenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
Di-n-butyl phthalate	< 26	ug/kg	26	84	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4-Dinitrophenol	< 6.6	ug/kg	6.6	21	1	8270C	4/30/2015	5/5/2015	MDK	8
2,6-Dinitrotoluene	< 19	ug/kg	19	59	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4-Dinitrotoluene	< 28	ug/kg	28	88	1	8270C	4/30/2015	5/5/2015	MDK	1
Di-n-octyl phthalate	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/5/2015	MDK	1
Diphenylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/5/2015	MDK	1
Fluoranthene	136	ug/kg	18	56	1	8270C	4/30/2015	5/5/2015	MDK	1
Fluorene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/5/2015	MDK	1
Hexachlorobenzene	< 17	ug/kg	17	55	1	8270C	4/30/2015	5/5/2015	MDK	1
Hexachlorobutadiene	< 20	ug/kg	20	64	1	8270C	4/30/2015	5/5/2015	MDK	1
Hexachlorocyclopentadiene	< 11	ug/kg	11	34	1	8270C	4/30/2015	5/5/2015	MDK	8
Hexachloroethane	< 14	ug/kg	14	44	1	8270C	4/30/2015	5/5/2015	MDK	1
Indeno(1,2,3-cd)pyrene	34 "J"	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
Isophorone	< 19	ug/kg	19	61	1	8270C	4/30/2015	5/5/2015	MDK	1
1-Methyl naphthalene	< 19	ug/kg	19	62	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Methyl naphthalene	< 18	ug/kg	18	58	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Methyl-4,6-dinitrophenol	< 9.1	ug/kg	9.1	29	1	8270C	4/30/2015	5/5/2015	MDK	8
Naphthalene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Nitroaniline	< 15	ug/kg	15	49	1	8270C	4/30/2015	5/5/2015	MDK	1
3-Nitroaniline	< 17	ug/kg	17	53	1	8270C	4/30/2015	5/5/2015	MDK	1
4-Nitroaniline	< 16	ug/kg	16	50	1	8270C	4/30/2015	5/5/2015	MDK	1
Nitrobenzene	< 18	ug/kg	18	56	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Nitrophenol	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
4-Nitrophenol	< 13	ug/kg	13	42	1	8270C	4/30/2015	5/5/2015	MDK	1
n-Nitrosodimethylamine	< 9.9	ug/kg	9.9	32	1	8270C	4/30/2015	5/5/2015	MDK	1
n-Nitrosodi-n-propylamine	< 25	ug/kg	25	79	1	8270C	4/30/2015	5/5/2015	MDK	1
Pentachlorophenol (PCP)	< 15	ug/kg	15	47	1	8270C	4/30/2015	5/5/2015	MDK	1
Phenanthrene	62 "J"	ug/kg	27	87	1	8270C	4/30/2015	5/5/2015	MDK	1
Phenol	< 20	ug/kg	20	62	1	8270C	4/30/2015	5/5/2015	MDK	1
Pyrene	98	ug/kg	21	66	1	8270C	4/30/2015	5/5/2015	MDK	1
Pyridine	< 17	ug/kg	17	54	1	8270C	4/30/2015	5/5/2015	MDK	1
2,3,4,6-Tetrachlorophenol	< 21	ug/kg	21	65	1	8270C	4/30/2015	5/5/2015	MDK	1
1,2,4-Trichlorobenzene	< 18	ug/kg	18	57	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4,5-Trichlorophenol	< 20	ug/kg	20	63	1	8270C	4/30/2015	5/5/2015	MDK	1
2,4,6-Trichlorophenol	< 18	ug/kg	18	59	1	8270C	4/30/2015	5/5/2015	MDK	1
2-Fluorobiphenyl-surrogate	70	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1
2-Fluorophenol-surrogate	74	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1
Nitrobenzene-d5-surrogate	62	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1
Phenol-d6-surrogate	67	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1
p-Terphenyl-d14-surrogate	86	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1
2,4,6-Tribromophenol-surrogate	88	REC %			1	8270C	4/30/2015	5/5/2015	MDK	1

Project Name VA PARKING LOT 7
Project # 15233

Invoice # E28834

Lab Code 5028834G
Sample ID TRIP BLANK
Sample Matrix Soil
Sample Date 4/27/2015

	Result	Unit	LOD	LOQ	Dil	Method	Ext Date	Run Date	Analyst	Code
Organic										
PVOC										
Benzene	< 0.025	mg/kg	0.014	0.046	1	GRO95/8021		4/30/2015	LPA	1
Ethylbenzene	< 0.025	mg/kg	0.014	0.045	1	GRO95/8021		4/30/2015	LPA	1
Methyl tert-butyl ether (MTBE)	< 0.025	mg/kg	0.013	0.041	1	GRO95/8021		4/30/2015	LPA	1
Toluene	< 0.025	mg/kg	0.015	0.048	1	GRO95/8021		4/30/2015	LPA	1
1,2,4-Trimethylbenzene	< 0.025	mg/kg	0.011	0.036	1	GRO95/8021		4/30/2015	LPA	1
1,3,5-Trimethylbenzene	< 0.025	mg/kg	0.012	0.038	1	GRO95/8021		4/30/2015	LPA	1
m&p-Xylene	< 0.05	mg/kg	0.023	0.074	1	GRO95/8021		4/30/2015	LPA	1
o-Xylene	< 0.025	mg/kg	0.024	0.078	1	GRO95/8021		4/30/2015	LPA	1

"J" Flag: Analyte detected between LOD and LOQ

LOD Limit of Detection

LOQ Limit of Quantitation

Code **Comment**

- 1 Laboratory QC within limits.
- 5 The QC blank not within established limits.
- 8 Closing calibration standard not within established limits.
- 43 Oil contamination indicated outside DRO window.
- CWT denotes sub contract lab - Certification #445126660
- ESC denotes sub contract lab - Certification #998093910

All solid sample results reported on a dry weight basis unless otherwise indicated. All LOD's and LOQ's are adjusted for dilutions but not dry weight. Subcontracted results are denoted by SUB in the analyst field.

Authorized Signature



CHAIN OF STUDY RECORD

Synergy

Environmental Lab, Inc.

1990 Prospect Ct. • Appleton, WI 54914
920-830-2455 • FAX 920-733-0631

Chain # **N2 3065**
Page **1** of **1**

Lab I.D. #	Account No.:	Quote No.:
Project #:	152333	
Sampler: (signature)	J. H. H. H.	
Project (Name / Location):	VA Parking Lot 7 / Milwaukee, WI	
Reports To:	Stacy Osusick	
Company	S. S. S.	
Address	1300 W. Canal St.	
City State Zip	MKE, WI 53233	
Phone	414-643-4200	
FAX	414-643-4210	
Invoice To:	Company	
Address	City State Zip	
Phone	FAX	

Sample Handling Request Rush Analysis Date Required _____ (Rushes accepted only with prior authorization) results by _____ Normal Turn Around May 5th AM
--

Analysis Requested										Other Analysis														
Lab I.D.	Sample I.D.	Collection Date (mm/dd/yyyy)	Comp	Grab	Filtered Y/N	No. of Containers	Sample Type (Matrix)*	Preservation	DRO (Mod DRO Sep 95)	GRO (Mod GRO Sep 95)	LEAD	NITRATE/NITRITE	OIL & GREASE	PAH (EPA 8270)	PCB	PVOC (EPA 8021)	PVOC + NAPHTHALENE	SULFATE	TOTAL SUSPENDED SOLIDS	VOC DW (EPA 542.2)	VOC (EPA 8260)	8-PCPA METALS	SVOC	PID/ FID
508837A	GP-1 (0-9')	4/27/15 8:15	X		N	6	Coil	1-meth	X	X	X				X	X	X					X	X	0.4
B	GP-2 (2-15')	8:50																				X	X	0.4
C	GP-3 (2-8')	9:45																				X	X	0.4
D	GP-4 (0-8')	11:40																				X	X	0.4
E	GP-5 (0-12')	9:40																				X	X	0.1
F	GP-6 (0-15')	12:20 pm																				X	X	0.8
G	Trip Blank	4-27-15 9am		X	T	1																		

Comments/Special Instructions ("Specify groundwater "GW", Drinking Water "DW", Waste Water "WW", Soil "S", Air "A", Oil, Sludge etc.)

Recorded PIDs are The highest PIDs encountered in composite

Sample Integrity - To be completed by receiving lab. Method of Shipment: <u>Dry Ice</u> Temp. of Temp. Blank: _____ °C On Ice: <u>X</u> Cooler seal intact upon receipt: <u>X</u> Yes ___ No ___	Relinquished By: (sign) <u>J. H. H. H.</u> Time <u>3:30</u> Date <u>4/27/15</u> Received By: (sign) _____ Time: <u>8:00</u> Date: <u>4/28/15</u>
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October 14, 2015

Jeffrey S. Polenske, P.E.
City Engineer
City of Milwaukee
841 N. Broadway, Room 701
Milwaukee, WI 53202

Subject: Notification of Approval for Parking Structure for VA Medical
Storm Water Management Plan
Storm Water Rules Review - M03002PP908-P5802

Dear Mr. Polenske:

The Milwaukee Metropolitan Sewerage District (District) is pleased to notify the City of Milwaukee that the Storm Water Management Plan (SWMP) for the Parking Structure at the VA Medical development has been approved. Based on the information provided in the SWMP submitted to the District on September 30, 2015, the SWMP meets the requirements of the Chapter 13 Surface Water and Storm Water Rules.

Thank you for submitting this storm water management plan to the District. Your efforts to effectively manage storm water issues in Milwaukee contribute to the overall goal of ensuring that flood risks do not increase as a result of new development or redevelopment.

If you have any questions, please contact Brittany Hess at bhess@mmsd.com or via phone at (414) 225-2219; or contact me at djensen@mmsd.com or via phone at (414) 225-2143.

Sincerely,

Debra Jensen
Planning Services Supervisor

Milwaukee Metropolitan Sewerage District

260 W. Seeboth Street, Milwaukee, WI 53204-1446

414-272-5100 www.mmsd.com

**STORM WATER
MANAGEMENT PLAN
SUBMITTAL CHECKLIST**

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

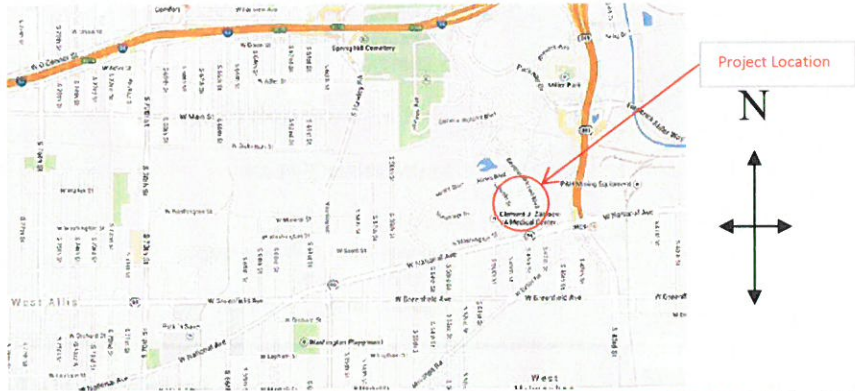
1) PLEASE TYPE OR PRINT LEGIBLY	
NAME OF OWNER JIM BEIER, PROJECT COR	NAME OF PREPARER LUKE LEISING
FIRM NAME MILWAUKEE VA MEDICAL CENTER	FIRM NAME GUIDON DESIGN, INC.
STREET ADDRESS 5000 WEST NATIONAL AVE	STREET ADDRESS 905 N CAPITOL AVE
CITY, STATE, ZIP MILWAUKEE, WI 53295	CITY, STATE, ZIP INDIANAPOLIS, IN 46204
TELEPHONE NUMBER / FAX NO. (414) 384-2000 /(47297)	TELEPHONE NUMBER / FAX NO. (317) 800-6388 /(109)
NAME OF CONTACT JIM BEIER, PROJECT COR	NAME OF CONTACT DAVID COUNSELL

2)

DEVELOPER <input checked="" type="checkbox"/>	CITY <input type="checkbox"/>	<p>A. GENERAL INFORMATION</p> <ol style="list-style-type: none"> 1. SITE OWNERS NAME, ADDRESS, ETC. 2. PROJECT LOCATION 3. PROJECT LOCATION MAP 4. OTHER PERTINENT INFORMATION
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>B. EXISTING SITE CONDITIONS MAP & PROPOSED SITE ALTERATIONS MAP</p> <ol style="list-style-type: none"> 1. VEGETATION 2. TOPOGRAPHY 3. IMPERVIOUS 4. STRUCTURES / BUILDINGS 5. FLOODPLAINS 6. SURFACE WATERS 7. LAND USE 8. EXPOSED MATERIAL AREAS
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>C. EXISTING DRAINAGE CONDITIONS MAP & PROPOSED DRAINAGE CONDITIONS MAP</p> <ol style="list-style-type: none"> 1. PONDING / PERCOLATION 2. DISCHARGE LOCATIONS TO SITE 3. STORM SEWER SYSTEMS 4. DISCHARGE LOCATIONS FROM SITE 5. DRAINAGE AREA BOUNDARIES 6. SURFACE WATERS RECEIVING STORMWATER DISCHARGE
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>D. HYDROLOGIC / HYDRAULIC CALCULATIONS</p> <ol style="list-style-type: none"> 1. ANALYSIS METHODS USED 2. LIMITING DISCHARGE CRITERIA
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>E. BEST MANAGEMENT PRACTICES</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>F. MAINTENANCE PLAN</p>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<p>G. ASSURANCES</p> <ol style="list-style-type: none"> 1. IRREVOCABLE LETTER OF CREDIT 2. CERTIFIED CHECK 3. SURETY BOND

STORM WATER
MANAGEMENT PLAN
APPLICATION FORM

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

1) PLEASE TYPE OR PRINT LEGIBLY	
NAME OF OWNER JIM BEIER, PROJECT COR FIRM NAME MILWAUKEE VA MEDICAL CENTER STREET ADDRESS 5000 WEST NATIONAL AVE CITY, STATE, ZIP MILWAUKEE, WI 53295 TELEPHONE NUMBER / FAX NO. (414) 384-2000 NAME OF CONTACT JIM BEIER, PROJECT COR	NAME OF PREPARER LUKE LEISING E-MAIL ADDRESS luke@guidondesign.com FIRM NAME GUIDON DESIGN, INC. STREET ADDRESS 905 N CAPITOL AVE CITY, STATE, ZIP INDIANAPOLIS, IN 46204 TELEPHONE NUMBER / FAX NO. (317) 800-6388 / (109) NAME OF CONTACT DAVID COUNSELL dcounsel@guidondesign.com
2) PROVIDE FULL LEGAL DESCRIPTION OF PROPERTY	
LANDS IN SE & NE 1/4 SEC 35-7-21 ALL S OF 1/4 SECTION LINE & BOUNDED E-S & W BY CITY LIMITS EXC ELY PART DEEDED FOR STADIUM TOTAL ACREAGE 2.29	
3) FLOODPLAIN IS THE SITE LOCATED IN A FLOODPLAIN? <div style="text-align: center;"> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO </div> IF YES, SOURCE: _____	IF YES: HAS A FLOODPLAIN IMPACT EVALUATION BEEN SUBMITTED TO THE DEPT. OF CITY DEVELOPMENT (SEE SECTIONS 295-710 THROUGH 295-720 OF THE CITY OF MILWAUKEE ZONING CODE) <div style="text-align: center;"> <input type="checkbox"/> YES <input type="checkbox"/> NO </div>
4) ILLICIT DISCHARGES AND ILLEGAL CONNECTIONS	
DO ILLICIT DISCHARGES AND ILLEGAL CONNECTIONS EXIST AT THE SITE? <div style="text-align: center;"> <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO LIST TESTING METHODS USED </div> IF YES, PLEASE DESCRIBE: _____	
5) SKETCH SITE LOCATION IDENTIFYING MAJOR ROADS, SURFACE WATER AREAS, AND OTHER LANDMARKS	
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>See Attached Project Location Map.</p> </div> <div style="flex: 2;">  </div> </div>	

**STORM WATER
MANAGEMENT PLAN
APPLICATION FORM**

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

<p>6) DESCRIBE PROPOSED SITE ALTERATIONS (INCLUDE SITE USE)</p> <p>The project consists of the construction of a four level parking garage and associated site improvements. The garage will be located east of the main hospital building in Lot 7, an existing asphalt parking lot. Lot 7 will be removed in its entirety to accommodate this garage. Additionally, several landscaped areas will be installed to separate lots 8 and 9 from Warehouse Way to the south and from N. Washington Drive to the north. The parking lot north of the proposed garage will also be altered to accommodate a bioretention area within a landscape island. The proposed project area totals 2.09 acres. Utility work for the proposed garage includes rerouting the existing storm sewer, as well as adding a sanitary sewer and domestic water services for the proposed garage.</p>	<p>LIST S.I.C. CODE(S) FOR PROPOSED SITE</p> <p><u>9451 SIC</u></p> <p><u>923140 NAICS</u></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>										
<p>IS THIS SUBJECT SITE PART OF A LARGER DEVELOPMENT PLAN?</p> <p><input type="checkbox"/> YES <input checked="" type="checkbox"/> NO</p> <p>IF YES, LIST TOTAL ACREAGE OF ENTIRE PLAN:</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid black;">Existing impervious Surface</td> <td style="border-bottom: 1px solid black; text-align: right;">1.90 ACRES</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Existing pervious Surface</td> <td style="border-bottom: 1px solid black; text-align: right;">0.39 ACRES</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Proposed Impervious Surface</td> <td style="border-bottom: 1px solid black; text-align: right;">1.84 ACRES</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Proposed pervious Surface</td> <td style="border-bottom: 1px solid black; text-align: right;">0.45 ACRES</td> </tr> <tr> <td style="border-bottom: 1px solid black;">Total Disturbed Area</td> <td style="border-bottom: 1px solid black; text-align: right;">2.29 ACRES</td> </tr> </table>	Existing impervious Surface	1.90 ACRES	Existing pervious Surface	0.39 ACRES	Proposed Impervious Surface	1.84 ACRES	Proposed pervious Surface	0.45 ACRES	Total Disturbed Area	2.29 ACRES
Existing impervious Surface	1.90 ACRES										
Existing pervious Surface	0.39 ACRES										
Proposed Impervious Surface	1.84 ACRES										
Proposed pervious Surface	0.45 ACRES										
Total Disturbed Area	2.29 ACRES										
<p>7) LIST ALL KNOWN SPILLS THAT HAVE OCCURRED WITHIN THE LAST FIVE YEARS (PLEASE ATTACH ANY COPIES OF ENVIRONMENTAL AUDIT REPORTS AND POLICE OR FIRE DEPT. REPORTS)</p> <p>On 10/5/11, MFD units responded w/HAZMAT team for an ethynol oxide spill. The report from this incident is attached. See also the full report included with this submission which includes 7 years of spill history.</p>											
<p>8) DESCRIBE EXISTING SOIL TYPES (REFER TO AVAILABLE SOIL MAPS AND/OR RESULTS OF SOIL BORINGS)</p> <p>The following summarizes the geotechnical findings from a report produced by Terracon on June 2, 2015: Existing fill materials comprised primarily of lean clay were encountered to depths of about 12 to 26 feet below existing grades at the boring locations. In addition, discrete deposits of buried, potentially compressible, topsoil were encountered within the lean clay fill. The fill material was underlain by a layered soil profile consisting of native stiff to hard lean clay, loose to medium dense sandy silt and medium dense to dense sand soils.</p>											
<p>9) DESCRIBE EXISTING GROUNDWATER LEVELS (REFER TO AVAILABLE SOIL BORING DATA)</p> <p>According to the geotechnical report listed above, the groundwater table is located at approximate elevation 615 feet, which correlates to a depth of 9 to 26 feet across this site.</p>											

Parking Structure Lot 7, VA Medical Center

**STORM WATER
MANAGEMENT PLAN
APPLICATION FORM**

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

10) DESCRIBE POTENTIAL SOURCES OF STORM WATER RUNOFF POLLUTION
(REFER TO MSDS FOR MATERIALS WITH OUTDOOR EXPOSURE)

EXISTING CONDITIONS:

Sediment, oil, and small debris.

PROPOSED CONDITIONS:

Sediment, oil, and small debris.

11) DESCRIBE CURRENT WATER QUALITY AND CLASSIFICATION, IF ANY, OF RECEIVING SURFACE WATERS
ON OR ADJACENT TO THE SITE (CONTACT WIS. DNR AND SEWRPC FOR CURRENT INFORMATION
ON AREA SURFACE WATERS)

Stormwater outfalls to Wood Creek which flows into the Menomonee River

Wood Creek is not listed on the State 303d list.

The Menomonee River has a high fecal coliform content along the portion where Wood Creek meets it.

12) DESCRIBE PREDICTED IMPACTS OF PROPOSED SITE ALTERATIONS ON:

STORM WATER DISCHARGE RATES FROM THE SITE (WITHOUT PROVIDING DETENTION)

	<u>Existing</u>	<u>Proposed (w/o Detention)</u>	<u>Proposed (w/Detention)</u>
2-Year	6.27 cfs	5.71 cfs	4.16 cfs
10-Year	9.12 cfs	8.30 cfs	7.35 cfs
100-Year	15.14 cfs	13.81 cfs	13.41 cfs

STORM WATER RUNOFF QUALITY

Project has been modeled in WINSLMM and shows a TSS removal of 40.31%.

GROUNDWATER LEVELS

Groundwater levels will not be affected by this project.

**STORM WATER
MANAGEMENT PLAN
APPLICATION FORM**

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

13) WHY SHOULD THIS SITE BE CONSIDERED FOR WAIVER OF THE STORM WATER MANAGEMENT PLAN REQUIREMENTS?
NA

14) DESCRIBE PROPOSED STRUCTURAL AND NON-STRUCTURAL BMPs FOR USE ON THIS PROJECT

(INDICATE PLAN SHEET NO(S) FOR STRUCTURAL BMPs)

Structural BMP's

Bio-detention Area (Approx. 3144 sq. ft., see detail in Stormwater Management Report, Appendix E)

Non-Structural BMP's

Trash cleanup, weeding, and watering on a 2 hours per week basis March through October
Spring, Summer and Fall full day clean up

15) PROVIDE ESTIMATES FOR CONSTRUCTION AND MAINTENANCE COSTS OF PROPOSED BMPs:

Structural BMP's Construction Cost

Bio-Detention Area (plan CJ101)

Structural BMP's Total:

Estimated Cost

\$56,592

\$56,592

Non-Structural BMP's Construction and Maintenance Cost

Trash cleanup, weeding, watering

Spring, Summer, and Fall Cleanup

Non-Structural BMPs Total:

\$3,640

\$840

\$4,480

**STORM WATER
MANAGEMENT PLAN
APPLICATION FORM**

PROJECT NAME: Parking Structure Lot 7, VA Medical Center

16) CERTIFICATION STATE OF WISCONSIN - MILWAUKEE COUNTY

I, _____, a registered professional engineer, certify that:

1. I have prepared the Storm Water Management Plan for the
aforedescribed property.
2. the Storm Water Management Plan complies with the provisions
of Chapter 120 of the Milwaukee Code of Ordinances and State Law.
3. and when required appropriate storm water discharge permits have
or will be obtained from the Wisconsin Department of Natural
Resources and/or the United States Environmental Protection Agency.

signature

typed name

Luke J. Leising, PE

10/30/2015

date

43897-6

license no.

STAMP WITH SIGNATURE



CITY APPROVALS (FOR CITY USE ONLY)

ENVIRONMENTAL ENGINEERING SECTION RECOMMENDATION
RECOMMENDED

Anthony D. Gajdzysk

REVIEWER

NMD Timothy J. Thun

11/6/15

ENGINEER IN CHARGE

DATE

OFFICE OF CITY ENGINEER APPROVAL
APPROVED

[Signature]

CITY ENGINEER

11/10/15

DATE

NO FINANCIAL GUARANTEE REQUIRED

☐

IRREVOCABLE LETTER OF CREDIT

☐

CERTIFIED CHECK

☐

SURETY BOND

☐

TO BE DETERMINED PRIOR TO ISSUANCE OF
BUILDING PERMIT

SIGNATURE OF DEVELOPMENT CENTER PERSONNEL

PERMIT NO. _____

[Signature] 11/17/2015